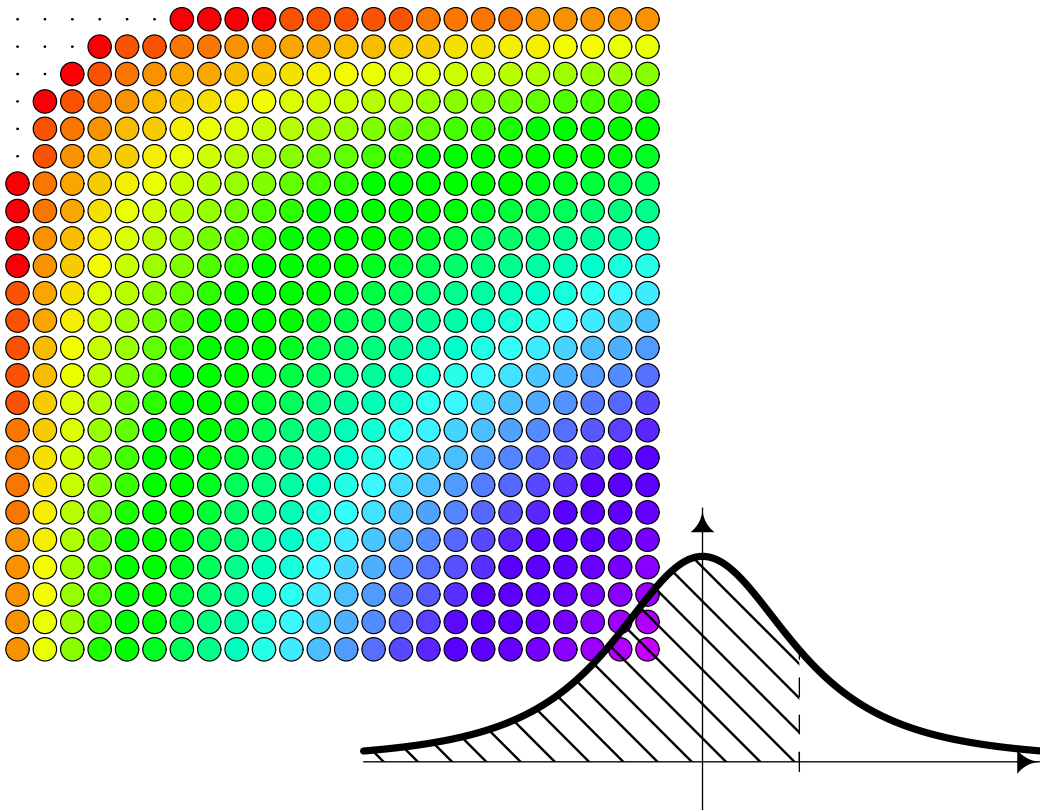




Statistical Tables



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1 Binomial distribution

Cumulative distribution function for $\theta \leq 0.09$

This section tabulates the cumulative distribution function (c.d.f.) of the binomial distribution, i.e. the distribution of the number of successes in n independent trials of an experiment which leads to a success with probability θ . The c.d.f. is

$$F(x) = \mathbb{P}\{X \leq x\} = \sum_{k=0}^x \mathbb{P}\{X = k\} = \sum_{k=0}^x \binom{n}{k} \theta^k (1 - \theta)^{n-k}.$$

The tables only cover $\theta \leq \frac{1}{2}$. For $\theta > \frac{1}{2}$, the rôles of successes and failures need to be reversed, i.e. if $X \sim \text{Bi}(n, \theta)$, and $Y \sim \text{Bi}(n, 1 - \theta)$, then $\mathbb{P}\{X \leq x\} = 1 - \mathbb{P}\{Y \leq n - x - 1\}$.

n	x	θ										
		0.001	0.005	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
1	0	0.9990	0.9950	0.9900	0.9800	0.9700	0.9600	0.9500	0.9400	0.9300	0.9200	0.9100
	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	0	0.9980	0.9900	0.9801	0.9604	0.9409	0.9216	0.9025	0.8836	0.8649	0.8464	0.8281
	1	1.0000	1.0000	0.9999	0.9996	0.9991	0.9984	0.9975	0.9964	0.9951	0.9936	0.9919
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	0	0.9970	0.9851	0.9703	0.9412	0.9127	0.8847	0.8574	0.8306	0.8044	0.7787	0.7536
	1	1.0000	0.9999	0.9997	0.9988	0.9974	0.9953	0.9928	0.9896	0.9860	0.9818	0.9772
	2	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9997	0.9995	0.9993
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	0	0.9960	0.9801	0.9606	0.9224	0.8853	0.8493	0.8145	0.7807	0.7481	0.7164	0.6857
	1	1.0000	0.9999	0.9994	0.9977	0.9948	0.9909	0.9860	0.9801	0.9733	0.9656	0.9570
	2	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9992	0.9987	0.9981	0.9973
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5	0	0.9950	0.9752	0.9510	0.9039	0.8587	0.8154	0.7738	0.7339	0.6957	0.6591	0.6240
	1	1.0000	0.9998	0.9990	0.9962	0.9915	0.9852	0.9774	0.9681	0.9575	0.9456	0.9326
	2	1.0000	1.0000	1.0000	0.9999	0.9997	0.9994	0.9988	0.9980	0.9969	0.9955	0.9937
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9997
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	0	0.9940	0.9704	0.9415	0.8858	0.8330	0.7828	0.7351	0.6899	0.6470	0.6064	0.5679
	1	1.0000	0.9996	0.9985	0.9943	0.9875	0.9784	0.9672	0.9541	0.9392	0.9227	0.9048
	2	1.0000	1.0000	1.0000	0.9998	0.9995	0.9988	0.9978	0.9962	0.9942	0.9915	0.9882
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9995	0.9992
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7	0	0.9930	0.9655	0.9321	0.8681	0.8080	0.7514	0.6983	0.6485	0.6017	0.5578	0.5168
	1	1.0000	0.9995	0.9980	0.9921	0.9829	0.9706	0.9556	0.9382	0.9187	0.8974	0.8745
	2	1.0000	1.0000	1.0000	0.9997	0.9991	0.9980	0.9962	0.9937	0.9903	0.9860	0.9807
	3	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9993	0.9988	0.9982
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	0	0.9920	0.9607	0.9227	0.8508	0.7837	0.7214	0.6634	0.6096	0.5596	0.5132	0.4703
	1	1.0000	0.9993	0.9973	0.9897	0.9777	0.9619	0.9428	0.9208	0.8965	0.8702	0.8423
	2	1.0000	1.0000	0.9999	0.9996	0.9987	0.9969	0.9942	0.9904	0.9853	0.9789	0.9711
	3	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9993	0.9987	0.9978	0.9966
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9	0	0.9910	0.9559	0.9135	0.8337	0.7602	0.6925	0.6302	0.5730	0.5204	0.4722	0.4279
	1	1.0000	0.9991	0.9966	0.9869	0.9718	0.9522	0.9288	0.9022	0.8729	0.8417	0.8088
	2	1.0000	1.0000	0.9999	0.9994	0.9980	0.9955	0.9916	0.9862	0.9791	0.9702	0.9595
	3	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9994	0.9987	0.9977	0.9963	0.9943
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9995
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
10	0	0.9900	0.9511	0.9044	0.8171	0.7374	0.6648	0.5987	0.5386	0.4840	0.4344	0.3894
	1	1.0000	0.9989	0.9957	0.9838	0.9655	0.9418	0.9139	0.8824	0.8483	0.8121	0.7746

→

n	x	0.001	0.005	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
10	2	1.0000	1.0000	0.9999	0.9991	0.9972	0.9938	0.9885	0.9812	0.9717	0.9599	0.9460
	3	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996	0.9990	0.9980	0.9964	0.9942	0.9912
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9994	0.9990
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
11	0	0.9891	0.9464	0.8953	0.8007	0.7153	0.6382	0.5688	0.5063	0.4501	0.3996	0.3544
	1	0.9999	0.9987	0.9948	0.9805	0.9587	0.9308	0.8981	0.8618	0.8228	0.7819	0.7399
	2	1.0000	1.0000	0.9998	0.9988	0.9963	0.9917	0.9848	0.9752	0.9630	0.9481	0.9305
	3	1.0000	1.0000	1.0000	1.0000	0.9998	0.9993	0.9984	0.9970	0.9947	0.9915	0.9871
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9995	0.9990	0.9983
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12	0	0.9881	0.9416	0.8864	0.7847	0.6938	0.6127	0.5404	0.4759	0.4186	0.3677	0.3225
	1	0.9999	0.9984	0.9938	0.9769	0.9514	0.9191	0.8816	0.8405	0.7967	0.7513	0.7052
	2	1.0000	1.0000	0.9998	0.9985	0.9952	0.9893	0.9804	0.9684	0.9532	0.9348	0.9134
	3	1.0000	1.0000	1.0000	0.9999	0.9997	0.9990	0.9978	0.9957	0.9925	0.9880	0.9820
	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9991	0.9984	0.9973
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	0	0.9871	0.9369	0.8775	0.7690	0.6730	0.5882	0.5133	0.4474	0.3893	0.3383	0.2935
	1	0.9999	0.9981	0.9928	0.9730	0.9436	0.9068	0.8646	0.8186	0.7702	0.7206	0.6707
	2	1.0000	1.0000	0.9997	0.9980	0.9938	0.9865	0.9755	0.9608	0.9422	0.9201	0.8946
	3	1.0000	1.0000	1.0000	0.9999	0.9995	0.9986	0.9969	0.9940	0.9897	0.9837	0.9758
	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9993	0.9987	0.9976	0.9959
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997	0.9995
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14	0	0.9861	0.9322	0.8687	0.7536	0.6528	0.5647	0.4877	0.4205	0.3620	0.3112	0.2670
	1	0.9999	0.9978	0.9916	0.9690	0.9355	0.8941	0.8470	0.7963	0.7436	0.6900	0.6368
	2	1.0000	1.0000	0.9997	0.9975	0.9923	0.9833	0.9699	0.9522	0.9302	0.9042	0.8745
	3	1.0000	1.0000	1.0000	0.9999	0.9994	0.9981	0.9958	0.9920	0.9864	0.9786	0.9685
	4	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9996	0.9990	0.9980	0.9965	0.9941
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9992
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
15	0	0.9851	0.9276	0.8601	0.7386	0.6333	0.5421	0.4633	0.3953	0.3367	0.2863	0.2430
	1	0.9999	0.9975	0.9904	0.9647	0.9270	0.8809	0.8290	0.7738	0.7168	0.6597	0.6035
	2	1.0000	0.9999	0.9996	0.9970	0.9906	0.9797	0.9638	0.9429	0.9171	0.8870	0.8531
	3	1.0000	1.0000	1.0000	0.9998	0.9992	0.9976	0.9945	0.9896	0.9825	0.9727	0.9601
	4	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9994	0.9986	0.9972	0.9950	0.9918
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997	0.9993	0.9987
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	0	0.9841	0.9229	0.8515	0.7238	0.6143	0.5204	0.4401	0.3716	0.3131	0.2634	0.2211
	1	0.9999	0.9971	0.9891	0.9601	0.9182	0.8673	0.8108	0.7511	0.6902	0.6299	0.5711
	2	1.0000	0.9999	0.9995	0.9963	0.9887	0.9758	0.9571	0.9327	0.9031	0.8689	0.8306
	3	1.0000	1.0000	1.0000	0.9998	0.9989	0.9968	0.9930	0.9868	0.9779	0.9658	0.9504
	4	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9991	0.9981	0.9962	0.9932	0.9889
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9990	0.9981
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17	0	0.9831	0.9183	0.8429	0.7093	0.5958	0.4996	0.4181	0.3493	0.2912	0.2423	0.2012
	1	0.9999	0.9968	0.9877	0.9554	0.9091	0.8535	0.7922	0.7283	0.6638	0.6005	0.5396
	2	1.0000	0.9999	0.9994	0.9956	0.9866	0.9714	0.9497	0.9218	0.8882	0.8497	0.8073
	3	1.0000	1.0000	1.0000	0.9997	0.9986	0.9960	0.9912	0.9836	0.9727	0.9581	0.9397
	4	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996	0.9988	0.9974	0.9949	0.9911	0.9855
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9993	0.9985	0.9973
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
18	0	0.9822	0.9137	0.8345	0.6951	0.5780	0.4796	0.3972	0.3283	0.2708	0.2229	0.1831

→

n	x	0.001	0.005	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
18	1	0.9998	0.9964	0.9862	0.9505	0.8997	0.8393	0.7735	0.7055	0.6378	0.5719	0.5091
	2	1.0000	0.9999	0.9993	0.9948	0.9843	0.9667	0.9419	0.9102	0.8725	0.8298	0.7832
	3	1.0000	1.0000	1.0000	0.9996	0.9982	0.9950	0.9891	0.9799	0.9667	0.9494	0.9277
	4	1.0000	1.0000	1.0000	1.0000	0.9998	0.9994	0.9985	0.9966	0.9933	0.9884	0.9814
	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9990	0.9979	0.9962
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9994
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19	0	0.9812	0.9092	0.8262	0.6812	0.5606	0.4604	0.3774	0.3086	0.2519	0.2051	0.1666
	1	0.9998	0.9960	0.9847	0.9454	0.8900	0.8249	0.7547	0.6829	0.6121	0.5440	0.4798
	2	1.0000	0.9999	0.9991	0.9939	0.9817	0.9616	0.9335	0.8979	0.8561	0.8092	0.7585
	3	1.0000	1.0000	1.0000	0.9995	0.9978	0.9939	0.9868	0.9757	0.9602	0.9398	0.9147
	4	1.0000	1.0000	1.0000	1.0000	0.9998	0.9993	0.9980	0.9956	0.9915	0.9853	0.9765
	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9994	0.9986	0.9971	0.9949
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9991
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
20	0	0.9802	0.9046	0.8179	0.6676	0.5438	0.4420	0.3585	0.2901	0.2342	0.1887	0.1516
	1	0.9998	0.9955	0.9831	0.9401	0.8802	0.8103	0.7358	0.6605	0.5869	0.5169	0.4516
	2	1.0000	0.9999	0.9990	0.9929	0.9790	0.9561	0.9245	0.8850	0.8390	0.7879	0.7334
	3	1.0000	1.0000	1.0000	0.9994	0.9973	0.9926	0.9841	0.9710	0.9529	0.9294	0.9007
	4	1.0000	1.0000	1.0000	1.0000	0.9997	0.9990	0.9974	0.9944	0.9893	0.9817	0.9710
	5	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9991	0.9981	0.9962	0.9932
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9994	0.9987
	7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	

Cumulative distribution function for $0.1 \leq \theta \leq 0.5$

n	x	θ										
		0.1	0.125	0.15	0.2	0.25	0.3	0.3333	0.35	0.4	0.45	0.5
1	0	0.9000	0.8750	0.8500	0.8000	0.7500	0.7000	0.6667	0.6500	0.6000	0.5500	0.5000
	1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	0	0.8100	0.7656	0.7225	0.6400	0.5625	0.4900	0.4444	0.4225	0.3600	0.3025	0.2500
	1	0.9900	0.9844	0.9775	0.9600	0.9375	0.9100	0.8889	0.8775	0.8400	0.7975	0.7500
	2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3	0	0.7290	0.6699	0.6141	0.5120	0.4219	0.3430	0.2963	0.2746	0.2160	0.1664	0.1250
	1	0.9720	0.9570	0.9392	0.8960	0.8438	0.7840	0.7407	0.7183	0.6480	0.5748	0.5000
	2	0.9990	0.9980	0.9966	0.9920	0.9844	0.9730	0.9630	0.9571	0.9360	0.9089	0.8750
	3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4	0	0.6561	0.5862	0.5220	0.4096	0.3164	0.2401	0.1975	0.1785	0.1296	0.0915	0.0625
	1	0.9477	0.9211	0.8905	0.8192	0.7383	0.6517	0.5926	0.5630	0.4752	0.3910	0.3125
	2	0.9963	0.9929	0.9880	0.9728	0.9492	0.9163	0.8889	0.8735	0.8208	0.7585	0.6875
	3	0.9999	0.9998	0.9995	0.9984	0.9961	0.9919	0.9877	0.9850	0.9744	0.9590	0.9375
	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5	0	0.5905	0.5129	0.4437	0.3277	0.2373	0.1681	0.1317	0.1160	0.0778	0.0503	0.0312
	1	0.9185	0.8793	0.8352	0.7373	0.6328	0.5282	0.4609	0.4284	0.3370	0.2562	0.1875
	2	0.9914	0.9839	0.9734	0.9421	0.8965	0.8369	0.7901	0.7648	0.6826	0.5931	0.5000
	3	0.9995	0.9989	0.9978	0.9933	0.9844	0.9692	0.9547	0.9460	0.9130	0.8688	0.8125
	4	1.0000	1.0000	0.9999	0.9997	0.9990	0.9976	0.9959	0.9947	0.9898	0.9815	0.9688
	5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	0	0.5314	0.4488	0.3771	0.2621	0.1780	0.1176	0.0878	0.0754	0.0467	0.0277	0.0156
	1	0.8857	0.8335	0.7765	0.6554	0.5339	0.4202	0.3512	0.3191	0.2333	0.1636	0.1094
	2	0.9842	0.9709	0.9527	0.9011	0.8306	0.7443	0.6804	0.6471	0.5443	0.4415	0.3437

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n	x	0.1	0.125	0.15	0.2	0.25	0.3	0.3333	0.35	0.4	0.45	0.5
6	3	0.9987	0.9970	0.9941	0.9830	0.9624	0.9295	0.8999	0.8826	0.8208	0.7447	0.6562
	4	0.9999	0.9998	0.9996	0.9984	0.9954	0.9891	0.9822	0.9777	0.9590	0.9308	0.8906
	5	1.0000	1.0000	1.0000	0.9999	0.9998	0.9993	0.9986	0.9982	0.9959	0.9917	0.9844
	6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7	0	0.4783	0.3927	0.3206	0.2097	0.1335	0.0824	0.0585	0.0490	0.0280	0.0152	0.0078
	1	0.8503	0.7854	0.7166	0.5767	0.4449	0.3294	0.2634	0.2338	0.1586	0.1024	0.0625
	2	0.9743	0.9537	0.9262	0.8520	0.7564	0.6471	0.5706	0.5323	0.4199	0.3164	0.2266
	3	0.9973	0.9938	0.9879	0.9667	0.9294	0.8740	0.8267	0.8002	0.7102	0.6083	0.5000
	4	0.9998	0.9995	0.9988	0.9953	0.9871	0.9712	0.9547	0.9444	0.9037	0.8471	0.7734
	5	1.0000	1.0000	0.9999	0.9996	0.9987	0.9962	0.9931	0.9910	0.9812	0.9643	0.9375
	6	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9994	0.9984	0.9963	0.9922
7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
8	0	0.4305	0.3436	0.2725	0.1678	0.1001	0.0576	0.0390	0.0319	0.0168	0.0084	0.0039
	1	0.8131	0.7363	0.6572	0.5033	0.3671	0.2553	0.1951	0.1691	0.1064	0.0632	0.0352
	2	0.9619	0.9327	0.8948	0.7969	0.6785	0.5518	0.4682	0.4278	0.3154	0.2201	0.1445
	3	0.9950	0.9888	0.9786	0.9437	0.8862	0.8059	0.7414	0.7064	0.5941	0.4770	0.3633
	4	0.9996	0.9988	0.9971	0.9896	0.9727	0.9420	0.9121	0.8939	0.8263	0.7396	0.6367
	5	1.0000	0.9999	0.9998	0.9988	0.9958	0.9887	0.9803	0.9747	0.9502	0.9115	0.8555
	6	1.0000	1.0000	1.0000	0.9999	0.9996	0.9987	0.9974	0.9964	0.9915	0.9819	0.9648
	7	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9998	0.9993	0.9983	0.9961
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
9	0	0.3874	0.3007	0.2316	0.1342	0.0751	0.0404	0.0260	0.0207	0.0101	0.0046	0.0020
	1	0.7748	0.6872	0.5995	0.4362	0.3003	0.1960	0.1431	0.1211	0.0705	0.0385	0.0195
	2	0.9470	0.9081	0.8591	0.7382	0.6007	0.4628	0.3772	0.3373	0.2318	0.1495	0.0898
	3	0.9917	0.9817	0.9661	0.9144	0.8343	0.7297	0.6503	0.6089	0.4826	0.3614	0.2539
	4	0.9991	0.9975	0.9944	0.9804	0.9511	0.9012	0.8552	0.8283	0.7334	0.6214	0.5000
	5	0.9999	0.9998	0.9994	0.9969	0.9900	0.9747	0.9576	0.9464	0.9006	0.8342	0.7461
	6	1.0000	1.0000	1.0000	0.9997	0.9987	0.9957	0.9917	0.9888	0.9750	0.9502	0.9102
	7	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996	0.9990	0.9986	0.9962	0.9909	0.9805
	8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997	0.9992	0.9980
9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
10	0	0.3487	0.2631	0.1969	0.1074	0.0563	0.0282	0.0173	0.0135	0.0060	0.0025	0.0010
	1	0.7361	0.6389	0.5443	0.3758	0.2440	0.1493	0.1040	0.0860	0.0464	0.0233	0.0107
	2	0.9298	0.8805	0.8202	0.6778	0.5256	0.3828	0.2991	0.2616	0.1673	0.0996	0.0547
	3	0.9872	0.9725	0.9500	0.8791	0.7759	0.6496	0.5593	0.5138	0.3823	0.2660	0.1719
	4	0.9984	0.9955	0.9901	0.9672	0.9219	0.8497	0.7869	0.7515	0.6331	0.5044	0.3770
	5	0.9999	0.9995	0.9986	0.9936	0.9803	0.9527	0.9234	0.9051	0.8338	0.7384	0.6230
	6	1.0000	1.0000	0.9999	0.9991	0.9965	0.9894	0.9803	0.9740	0.9452	0.8980	0.8281
	7	1.0000	1.0000	1.0000	0.9999	0.9996	0.9984	0.9966	0.9952	0.9877	0.9726	0.9453
	8	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996	0.9995	0.9983	0.9955	0.9893
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9990
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
11	0	0.3138	0.2302	0.1673	0.0859	0.0422	0.0198	0.0116	0.0088	0.0036	0.0014	0.0005
	1	0.6974	0.5919	0.4922	0.3221	0.1971	0.1130	0.0751	0.0606	0.0302	0.0139	0.0059
	2	0.9104	0.8503	0.7788	0.6174	0.4552	0.3127	0.2341	0.2001	0.1189	0.0652	0.0327
	3	0.9815	0.9610	0.9306	0.8389	0.7133	0.5696	0.4726	0.4256	0.2963	0.1911	0.1133
	4	0.9972	0.9927	0.9841	0.9496	0.8854	0.7897	0.7110	0.6683	0.5328	0.3971	0.2744
	5	0.9997	0.9990	0.9973	0.9883	0.9657	0.9218	0.8779	0.8513	0.7535	0.6331	0.5000
	6	1.0000	0.9999	0.9997	0.9980	0.9924	0.9784	0.9614	0.9499	0.9006	0.8262	0.7256
	7	1.0000	1.0000	1.0000	0.9998	0.9988	0.9957	0.9912	0.9878	0.9707	0.9390	0.8867
	8	1.0000	1.0000	1.0000	1.0000	0.9999	0.9994	0.9986	0.9980	0.9941	0.9852	0.9673
	9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9993	0.9978	0.9941
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9995
11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
12	0	0.2824	0.2014	0.1422	0.0687	0.0317	0.0138	0.0077	0.0057	0.0022	0.0008	0.0002
	1	0.6590	0.5467	0.4435	0.2749	0.1584	0.0850	0.0540	0.0424	0.0196	0.0083	0.0032
	2	0.8891	0.8180	0.7358	0.5583	0.3907	0.2528	0.1811	0.1513	0.0834	0.0421	0.0193
	3	0.9744	0.9472	0.9078	0.7946	0.6488	0.4925	0.3931	0.3467	0.2253	0.1345	0.0730
	4	0.9957	0.9887	0.9761	0.9274	0.8424	0.7237	0.6315	0.5833	0.4382	0.3044	0.1938
	5	0.9995	0.9982	0.9954	0.9806	0.9456	0.8822	0.8223	0.7873	0.6652	0.5269	0.3872
6	0.9999	0.9998	0.9993	0.9961	0.9857	0.9614	0.9336	0.9154	0.8418	0.7393	0.6128	

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n	x	0.1	0.125	0.15	0.2	0.25	0.3	0.3333	0.35	0.4	0.45	0.5
12	7	1.0000	1.0000	0.9999	0.9994	0.9972	0.9905	0.9812	0.9745	0.9427	0.8883	0.8062
	8	1.0000	1.0000	1.0000	0.9999	0.9996	0.9983	0.9961	0.9944	0.9847	0.9644	0.9270
	9	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9995	0.9992	0.9972	0.9921	0.9807
	10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9989	0.9968
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	0	0.2542	0.1762	0.1209	0.0550	0.0238	0.0097	0.0051	0.0037	0.0013	0.0004	0.0001
	1	0.6213	0.5035	0.3983	0.2336	0.1267	0.0637	0.0385	0.0296	0.0126	0.0049	0.0017
	2	0.8661	0.7841	0.6920	0.5017	0.3326	0.2025	0.1387	0.1132	0.0579	0.0269	0.0112
	3	0.9658	0.9310	0.8820	0.7473	0.5843	0.4206	0.3224	0.2783	0.1686	0.0929	0.0461
	4	0.9935	0.9835	0.9658	0.9009	0.7940	0.6543	0.5520	0.5005	0.3530	0.2279	0.1334
	5	0.9991	0.9970	0.9925	0.9700	0.9198	0.8346	0.7587	0.7159	0.5744	0.4268	0.2905
	6	0.9999	0.9996	0.9987	0.9930	0.9757	0.9376	0.8965	0.8705	0.7712	0.6437	0.5000
	7	1.0000	1.0000	0.9998	0.9988	0.9944	0.9818	0.9653	0.9538	0.9023	0.8212	0.7095
	8	1.0000	1.0000	1.0000	0.9998	0.9990	0.9960	0.9912	0.9874	0.9679	0.9302	0.8666
	9	1.0000	1.0000	1.0000	1.0000	0.9999	0.9993	0.9984	0.9975	0.9922	0.9797	0.9539
	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9987	0.9959	0.9888
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9995	0.9983
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
14	0	0.2288	0.1542	0.1028	0.0440	0.0178	0.0068	0.0034	0.0024	0.0008	0.0002	0.0001
	1	0.5846	0.4626	0.3567	0.1979	0.1010	0.0475	0.0274	0.0205	0.0081	0.0029	0.0009
	2	0.8416	0.7490	0.6479	0.4481	0.2811	0.1608	0.1053	0.0839	0.0398	0.0170	0.0065
	3	0.9559	0.9127	0.8535	0.6982	0.5213	0.3552	0.2612	0.2205	0.1243	0.0632	0.0287
	4	0.9908	0.9770	0.9533	0.8702	0.7415	0.5842	0.4755	0.4227	0.2793	0.1672	0.0898
	5	0.9985	0.9953	0.9885	0.9561	0.8883	0.7805	0.6898	0.6405	0.4859	0.3373	0.2120
	6	0.9998	0.9993	0.9978	0.9884	0.9617	0.9067	0.8505	0.8164	0.6925	0.5461	0.3953
	7	1.0000	0.9999	0.9997	0.9976	0.9897	0.9685	0.9424	0.9247	0.8499	0.7414	0.6047
	8	1.0000	1.0000	1.0000	0.9996	0.9978	0.9917	0.9826	0.9757	0.9417	0.8811	0.7880
	9	1.0000	1.0000	1.0000	1.0000	0.9997	0.9983	0.9960	0.9940	0.9825	0.9574	0.9102
	10	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9993	0.9989	0.9961	0.9886	0.9713
	11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9994	0.9978	0.9935
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9991
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
15	0	0.2059	0.1349	0.0874	0.0352	0.0134	0.0047	0.0023	0.0016	0.0005	0.0001	0.0000
	1	0.5490	0.4241	0.3186	0.1671	0.0802	0.0353	0.0194	0.0142	0.0052	0.0017	0.0005
	2	0.8159	0.7132	0.6042	0.3980	0.2361	0.1268	0.0794	0.0617	0.0271	0.0107	0.0037
	3	0.9444	0.8922	0.8227	0.6482	0.4613	0.2969	0.2092	0.1727	0.0905	0.0424	0.0176
	4	0.9873	0.9689	0.9383	0.8358	0.6865	0.5155	0.4041	0.3519	0.2173	0.1204	0.0592
	5	0.9978	0.9930	0.9832	0.9389	0.8516	0.7216	0.6184	0.5643	0.4032	0.2608	0.1509
	6	0.9997	0.9988	0.9964	0.9819	0.9434	0.8689	0.7970	0.7548	0.6098	0.4522	0.3036
	7	1.0000	0.9998	0.9994	0.9958	0.9827	0.9500	0.9118	0.8868	0.7869	0.6535	0.5000
	8	1.0000	1.0000	0.9999	0.9992	0.9958	0.9848	0.9692	0.9578	0.9050	0.8182	0.6964
	9	1.0000	1.0000	1.0000	0.9999	0.9992	0.9963	0.9915	0.9876	0.9662	0.9231	0.8491
	10	1.0000	1.0000	1.0000	1.0000	0.9999	0.9993	0.9982	0.9972	0.9907	0.9745	0.9408
	11	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9995	0.9981	0.9937	0.9824
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9989	0.9963
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9995
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
16	0	0.1853	0.1181	0.0743	0.0281	0.0100	0.0033	0.0015	0.0010	0.0003	0.0001	0.0000
	1	0.5147	0.3879	0.2839	0.1407	0.0635	0.0261	0.0137	0.0098	0.0033	0.0010	0.0003
	2	0.7892	0.6771	0.5614	0.3518	0.1971	0.0994	0.0594	0.0451	0.0183	0.0066	0.0021
	3	0.9316	0.8698	0.7899	0.5981	0.4050	0.2459	0.1659	0.1339	0.0651	0.0281	0.0106
	4	0.9830	0.9593	0.9209	0.7982	0.6302	0.4499	0.3391	0.2892	0.1666	0.0853	0.0384
	5	0.9967	0.9900	0.9765	0.9183	0.8103	0.6598	0.5469	0.4900	0.3288	0.1976	0.1051
	6	0.9995	0.9981	0.9944	0.9733	0.9204	0.8247	0.7374	0.6881	0.5272	0.3660	0.2272
	7	0.9999	0.9997	0.9989	0.9930	0.9729	0.9256	0.8735	0.8406	0.7161	0.5629	0.4018
	8	1.0000	1.0000	0.9998	0.9985	0.9925	0.9743	0.9500	0.9329	0.8577	0.7441	0.5982
	9	1.0000	1.0000	1.0000	0.9998	0.9984	0.9929	0.9841	0.9771	0.9417	0.8759	0.7728

→

n	x	0.1	0.125	0.15	0.2	0.25	0.3	0.3333	0.35	0.4	0.45	0.5
16	10	1.0000	1.0000	1.0000	1.0000	0.9997	0.9984	0.9960	0.9938	0.9809	0.9514	0.8949
	11	1.0000	1.0000	1.0000	1.0000	1.0000	0.9997	0.9992	0.9987	0.9951	0.9851	0.9616
	12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9991	0.9965	0.9894
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9994	0.9979
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
17	0	0.1668	0.1033	0.0631	0.0225	0.0075	0.0023	0.0010	0.0007	0.0002	0.0000	0.0000
	1	0.4818	0.3542	0.2525	0.1182	0.0501	0.0193	0.0096	0.0067	0.0021	0.0006	0.0001
	2	0.7618	0.6409	0.5198	0.3096	0.1637	0.0774	0.0442	0.0327	0.0123	0.0041	0.0012
	3	0.9174	0.8457	0.7556	0.5489	0.3530	0.2019	0.1304	0.1028	0.0464	0.0184	0.0064
	4	0.9779	0.9482	0.9013	0.7582	0.5739	0.3887	0.2814	0.2348	0.1260	0.0596	0.0245
	5	0.9953	0.9862	0.9681	0.8943	0.7653	0.5968	0.4777	0.4197	0.2639	0.1471	0.0717
	6	0.9992	0.9971	0.9917	0.9623	0.8929	0.7752	0.6739	0.6188	0.4478	0.2902	0.1662
	7	0.9999	0.9995	0.9983	0.9891	0.9598	0.8954	0.8281	0.7872	0.6405	0.4743	0.3145
	8	1.0000	0.9999	0.9997	0.9974	0.9876	0.9597	0.9245	0.9006	0.8011	0.6626	0.5000
	9	1.0000	1.0000	1.0000	0.9995	0.9969	0.9873	0.9727	0.9617	0.9081	0.8166	0.6855
	10	1.0000	1.0000	1.0000	0.9999	0.9994	0.9968	0.9920	0.9880	0.9652	0.9174	0.8338
	11	1.0000	1.0000	1.0000	1.0000	0.9999	0.9993	0.9981	0.9970	0.9894	0.9699	0.9283
	12	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9994	0.9975	0.9914	0.9755
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9995	0.9981	0.9936
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9988
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
18	0	0.1501	0.0904	0.0536	0.0180	0.0056	0.0016	0.0007	0.0004	0.0001	0.0000	0.0000
	1	0.4503	0.3228	0.2241	0.0991	0.0395	0.0142	0.0068	0.0046	0.0013	0.0003	0.0001
	2	0.7338	0.6051	0.4797	0.2713	0.1353	0.0600	0.0326	0.0236	0.0082	0.0025	0.0007
	3	0.9018	0.8201	0.7202	0.5010	0.3057	0.1646	0.1017	0.0783	0.0328	0.0120	0.0038
	4	0.9718	0.9354	0.8794	0.7164	0.5187	0.3327	0.2311	0.1886	0.0942	0.0411	0.0154
	5	0.9936	0.9814	0.9581	0.8671	0.7175	0.5344	0.4122	0.3550	0.2088	0.1077	0.0481
	6	0.9988	0.9957	0.9882	0.9487	0.8610	0.7217	0.6085	0.5491	0.3743	0.2258	0.1189
	7	0.9998	0.9992	0.9973	0.9837	0.9431	0.8593	0.7767	0.7283	0.5634	0.3915	0.2403
	8	1.0000	0.9999	0.9995	0.9957	0.9807	0.9404	0.8924	0.8609	0.7368	0.5778	0.4073
	9	1.0000	1.0000	0.9999	0.9991	0.9946	0.9790	0.9567	0.9403	0.8653	0.7473	0.5927
	10	1.0000	1.0000	1.0000	0.9998	0.9988	0.9939	0.9856	0.9788	0.9424	0.8720	0.7597
	11	1.0000	1.0000	1.0000	1.0000	0.9998	0.9986	0.9961	0.9938	0.9797	0.9463	0.8811
	12	1.0000	1.0000	1.0000	1.0000	1.0000	0.9997	0.9991	0.9986	0.9942	0.9817	0.9519
	13	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9987	0.9951	0.9846
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	0.9990	0.9962
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9993
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19	0	0.1351	0.0791	0.0456	0.0144	0.0042	0.0011	0.0005	0.0003	0.0001	0.0000	0.0000
	1	0.4203	0.2938	0.1985	0.0829	0.0310	0.0104	0.0047	0.0031	0.0008	0.0002	0.0000
	2	0.7054	0.5698	0.4413	0.2369	0.1113	0.0462	0.0240	0.0170	0.0055	0.0015	0.0004
	3	0.8850	0.7933	0.6841	0.4551	0.2631	0.1332	0.0787	0.0591	0.0230	0.0077	0.0022
	4	0.9648	0.9209	0.8556	0.6733	0.4654	0.2822	0.1879	0.1500	0.0696	0.0280	0.0096
	5	0.9914	0.9757	0.9463	0.8369	0.6678	0.4739	0.3519	0.2968	0.1629	0.0777	0.0318
	6	0.9983	0.9939	0.9837	0.9324	0.8251	0.6655	0.5431	0.4812	0.3081	0.1727	0.0835
	7	0.9997	0.9988	0.9959	0.9767	0.9225	0.8180	0.7207	0.6656	0.4878	0.3169	0.1796
	8	1.0000	0.9998	0.9992	0.9933	0.9713	0.9161	0.8538	0.8145	0.6675	0.4940	0.3238
	9	1.0000	1.0000	0.9999	0.9984	0.9911	0.9674	0.9352	0.9125	0.8139	0.6710	0.5000
	10	1.0000	1.0000	1.0000	0.9997	0.9977	0.9895	0.9759	0.9653	0.9115	0.8159	0.6762
	11	1.0000	1.0000	1.0000	1.0000	0.9995	0.9972	0.9926	0.9886	0.9648	0.9129	0.8204
	12	1.0000	1.0000	1.0000	1.0000	0.9999	0.9994	0.9981	0.9969	0.9884	0.9658	0.9165
	13	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996	0.9993	0.9969	0.9891	0.9682
	14	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9994	0.9972	0.9904
	15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9995	0.9978
	16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9996
	17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	0	0.1216	0.0692	0.0388	0.0115	0.0032	0.0008	0.0003	0.0002	0.0000	0.0000	0.0000
	1	0.3917	0.2669	0.1756	0.0692	0.0243	0.0076	0.0033	0.0021	0.0005	0.0001	0.0000

→

2 Poisson distribution

Cumulative distribution function

This section tabulates the cumulative distribution function (c.d.f.) of the Poisson distribution with expected value (“rate”) λ , which is

$$F(x) = \mathbb{P}\{X \leq x\} = \sum_{k=0}^x \mathbb{P}\{X = k\} = \sum_{k=0}^x \exp(-\lambda) \frac{\lambda^k}{k!}.$$

x	λ												
	0.02	0.04	0.06	0.08	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5
0	0.9802	0.9608	0.9418	0.9231	0.9048	0.8607	0.8187	0.7788	0.7408	0.7047	0.6703	0.6376	0.6065
1	0.9998	0.9992	0.9983	0.9970	0.9953	0.9898	0.9825	0.9735	0.9631	0.9513	0.9384	0.9246	0.9098
2	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9989	0.9978	0.9964	0.9945	0.9921	0.9891	0.9856
3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997	0.9995	0.9992	0.9988	0.9982
4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998
5	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ												
	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1	1.1	1.2	1.3
0	0.5769	0.5488	0.5220	0.4966	0.4724	0.4493	0.4274	0.4066	0.3867	0.3679	0.3329	0.3012	0.2725
1	0.8943	0.8781	0.8614	0.8442	0.8266	0.8088	0.7907	0.7725	0.7541	0.7358	0.6990	0.6626	0.6268
2	0.9815	0.9769	0.9717	0.9659	0.9595	0.9526	0.9451	0.9371	0.9287	0.9197	0.9004	0.8795	0.8571
3	0.9975	0.9966	0.9956	0.9942	0.9927	0.9909	0.9889	0.9865	0.9839	0.9810	0.9743	0.9662	0.9569
4	0.9997	0.9996	0.9994	0.9992	0.9989	0.9986	0.9982	0.9977	0.9971	0.9963	0.9946	0.9923	0.9893
5	1.0000	1.0000	0.9999	0.9999	0.9999	0.9998	0.9997	0.9997	0.9995	0.9994	0.9990	0.9985	0.9978
6	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9997	0.9996
7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
8	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ												
	1.4	1.5	1.6	1.7	1.8	1.9	2	2.2	2.4	2.6	2.8	3	3.2
0	0.2466	0.2231	0.2019	0.1827	0.1653	0.1496	0.1353	0.1108	0.0907	0.0743	0.0608	0.0498	0.0408
1	0.5918	0.5578	0.5249	0.4932	0.4628	0.4337	0.4060	0.3546	0.3084	0.2674	0.2311	0.1991	0.1712
2	0.8335	0.8088	0.7834	0.7572	0.7306	0.7037	0.6767	0.6227	0.5697	0.5184	0.4695	0.4232	0.3799
3	0.9463	0.9344	0.9212	0.9068	0.8913	0.8747	0.8571	0.8194	0.7787	0.7360	0.6919	0.6472	0.6025
4	0.9857	0.9814	0.9763	0.9704	0.9636	0.9559	0.9473	0.9275	0.9041	0.8774	0.8477	0.8153	0.7806
5	0.9968	0.9955	0.9940	0.9920	0.9896	0.9868	0.9834	0.9751	0.9643	0.9510	0.9349	0.9161	0.8946
6	0.9994	0.9991	0.9987	0.9981	0.9974	0.9966	0.9955	0.9925	0.9884	0.9828	0.9756	0.9665	0.9554
7	0.9999	0.9998	0.9997	0.9996	0.9994	0.9992	0.9989	0.9980	0.9967	0.9947	0.9919	0.9881	0.9832
8	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9998	0.9995	0.9991	0.9985	0.9976	0.9962	0.9943
9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9993	0.9989	0.9982
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9995
11	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999
12	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ												
	3.4	3.6	3.8	4	4.2	4.4	4.6	4.8	5	5.2	5.4	5.6	5.8
0	0.0334	0.0273	0.0224	0.0183	0.0150	0.0123	0.0101	0.0082	0.0067	0.0055	0.0045	0.0037	0.0030
1	0.1468	0.1257	0.1074	0.0916	0.0780	0.0663	0.0563	0.0477	0.0404	0.0342	0.0289	0.0244	0.0206
2	0.3397	0.3027	0.2689	0.2381	0.2102	0.1851	0.1626	0.1425	0.1247	0.1088	0.0948	0.0824	0.0715
3	0.5584	0.5152	0.4735	0.4335	0.3954	0.3594	0.3257	0.2942	0.2650	0.2381	0.2133	0.1906	0.1700
4	0.7442	0.7064	0.6678	0.6288	0.5898	0.5512	0.5132	0.4763	0.4405	0.4061	0.3733	0.3422	0.3127
5	0.8705	0.8441	0.8156	0.7851	0.7531	0.7199	0.6858	0.6510	0.6160	0.5809	0.5461	0.5119	0.4783
6	0.9421	0.9267	0.9091	0.8893	0.8675	0.8436	0.8180	0.7908	0.7622	0.7324	0.7017	0.6703	0.6384
7	0.9769	0.9692	0.9599	0.9489	0.9361	0.9214	0.9049	0.8867	0.8666	0.8449	0.8217	0.7970	0.7710

x	3.4	3.6	3.8	4	4.2	4.4	4.6	4.8	5	5.2	5.4	5.6	5.8
8	0.9917	0.9883	0.9840	0.9786	0.9721	0.9642	0.9549	0.9442	0.9319	0.9181	0.9027	0.8857	0.8672
9	0.9973	0.9960	0.9942	0.9919	0.9889	0.9851	0.9805	0.9749	0.9682	0.9603	0.9512	0.9409	0.9292
10	0.9992	0.9987	0.9981	0.9972	0.9959	0.9943	0.9922	0.9896	0.9863	0.9823	0.9775	0.9718	0.9651
11	0.9998	0.9996	0.9994	0.9991	0.9986	0.9980	0.9971	0.9960	0.9945	0.9927	0.9904	0.9875	0.9841
12	0.9999	0.9999	0.9998	0.9997	0.9996	0.9993	0.9990	0.9986	0.9980	0.9972	0.9962	0.9949	0.9932
13	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9997	0.9995	0.9993	0.9990	0.9986	0.9980	0.9973
14	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9998	0.9997	0.9995	0.9993	0.9990
15	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9998	0.9996
16	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999
17	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ												
	6	6.2	6.4	6.6	6.8	7	7.2	7.4	7.6	7.8	8	8.5	9
0	0.0025	0.0020	0.0017	0.0014	0.0011	0.0009	0.0007	0.0006	0.0005	0.0004	0.0003	0.0002	0.0001
1	0.0174	0.0146	0.0123	0.0103	0.0087	0.0073	0.0061	0.0051	0.0043	0.0036	0.0030	0.0019	0.0012
2	0.0620	0.0536	0.0463	0.0400	0.0344	0.0296	0.0255	0.0219	0.0188	0.0161	0.0138	0.0093	0.0062
3	0.1512	0.1342	0.1189	0.1052	0.0928	0.0818	0.0719	0.0632	0.0554	0.0485	0.0424	0.0301	0.0212
4	0.2851	0.2592	0.2351	0.2127	0.1920	0.1730	0.1555	0.1395	0.1249	0.1117	0.0996	0.0744	0.0550
5	0.4457	0.4141	0.3837	0.3547	0.3270	0.3007	0.2759	0.2526	0.2307	0.2103	0.1912	0.1496	0.1157
6	0.6063	0.5742	0.5423	0.5108	0.4799	0.4497	0.4204	0.3920	0.3646	0.3384	0.3134	0.2562	0.2068
7	0.7440	0.7160	0.6873	0.6581	0.6285	0.5987	0.5689	0.5393	0.5100	0.4812	0.4530	0.3856	0.3239
8	0.8472	0.8259	0.8033	0.7796	0.7548	0.7291	0.7027	0.6757	0.6482	0.6204	0.5925	0.5231	0.4557
9	0.9161	0.9016	0.8858	0.8686	0.8502	0.8305	0.8096	0.7877	0.7649	0.7411	0.7166	0.6530	0.5874
10	0.9574	0.9486	0.9386	0.9274	0.9151	0.9015	0.8867	0.8707	0.8535	0.8352	0.8159	0.7634	0.7060
11	0.9799	0.9750	0.9693	0.9627	0.9552	0.9467	0.9371	0.9265	0.9148	0.9020	0.8881	0.8487	0.8030
12	0.9912	0.9887	0.9857	0.9821	0.9779	0.9730	0.9673	0.9609	0.9536	0.9454	0.9362	0.9091	0.8758
13	0.9964	0.9952	0.9937	0.9920	0.9898	0.9872	0.9841	0.9805	0.9762	0.9714	0.9658	0.9486	0.9261
14	0.9986	0.9981	0.9974	0.9966	0.9956	0.9943	0.9927	0.9908	0.9886	0.9859	0.9827	0.9726	0.9585
15	0.9995	0.9993	0.9990	0.9986	0.9982	0.9976	0.9969	0.9959	0.9948	0.9934	0.9918	0.9862	0.9780
16	0.9998	0.9997	0.9996	0.9995	0.9993	0.9990	0.9987	0.9983	0.9978	0.9971	0.9963	0.9934	0.9889
17	0.9999	0.9999	0.9999	0.9998	0.9997	0.9996	0.9995	0.9993	0.9991	0.9988	0.9984	0.9970	0.9947
18	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9998	0.9997	0.9996	0.9995	0.9993	0.9987	0.9976
19	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9999	0.9998	0.9997	0.9995	0.9989
20	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9996
21	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
22	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
23	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

x	λ												
	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5
0	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	0.0008	0.0005	0.0003	0.0002	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0042	0.0028	0.0018	0.0012	0.0008	0.0005	0.0003	0.0002	0.0001	0.0001	0.0001	0.0000	0.0000
3	0.0149	0.0103	0.0071	0.0049	0.0034	0.0023	0.0016	0.0011	0.0007	0.0005	0.0003	0.0002	0.0001
4	0.0403	0.0293	0.0211	0.0151	0.0107	0.0076	0.0053	0.0037	0.0026	0.0018	0.0012	0.0009	0.0006
5	0.0885	0.0671	0.0504	0.0375	0.0277	0.0203	0.0148	0.0107	0.0077	0.0055	0.0039	0.0028	0.0020
6	0.1649	0.1301	0.1016	0.0786	0.0603	0.0458	0.0346	0.0259	0.0193	0.0142	0.0105	0.0076	0.0055
7	0.2687	0.2202	0.1785	0.1432	0.1137	0.0895	0.0698	0.0540	0.0415	0.0316	0.0239	0.0180	0.0135
8	0.3918	0.3328	0.2794	0.2320	0.1906	0.1550	0.1249	0.0998	0.0790	0.0621	0.0484	0.0374	0.0288
9	0.5218	0.4579	0.3971	0.3405	0.2888	0.2424	0.2014	0.1658	0.1353	0.1094	0.0878	0.0699	0.0552
10	0.6453	0.5830	0.5207	0.4599	0.4017	0.3472	0.2971	0.2517	0.2112	0.1757	0.1449	0.1185	0.0961
11	0.7520	0.6968	0.6387	0.5793	0.5198	0.4616	0.4058	0.3532	0.3045	0.2600	0.2201	0.1848	0.1538
12	0.8364	0.7916	0.7420	0.6887	0.6329	0.5760	0.5190	0.4631	0.4093	0.3585	0.3111	0.2676	0.2283
13	0.8981	0.8645	0.8253	0.7813	0.7330	0.6815	0.6278	0.5730	0.5182	0.4644	0.4125	0.3632	0.3171
14	0.9400	0.9165	0.8879	0.8540	0.8153	0.7720	0.7250	0.6751	0.6233	0.5704	0.5176	0.4657	0.4154
15	0.9665	0.9513	0.9317	0.9074	0.8783	0.8444	0.8060	0.7636	0.7178	0.6694	0.6192	0.5681	0.5170
16	0.9823	0.9730	0.9604	0.9441	0.9236	0.8987	0.8693	0.8355	0.7975	0.7559	0.7112	0.6641	0.6154
17	0.9911	0.9857	0.9781	0.9678	0.9542	0.9370	0.9158	0.8905	0.8609	0.8272	0.7897	0.7489	0.7052
18	0.9957	0.9928	0.9885	0.9823	0.9738	0.9626	0.9481	0.9302	0.9084	0.8826	0.8530	0.8195	0.7825

x	9.5	10	10.5	11	11.5	12	12.5	13	13.5	14	14.5	15	15.5
19	0.9980	0.9965	0.9942	0.9907	0.9857	0.9787	0.9694	0.9573	0.9421	0.9235	0.9012	0.8752	0.8455
20	0.9991	0.9984	0.9972	0.9953	0.9925	0.9884	0.9827	0.9750	0.9649	0.9521	0.9362	0.9170	0.8944
21	0.9996	0.9993	0.9987	0.9977	0.9962	0.9939	0.9906	0.9859	0.9796	0.9712	0.9604	0.9469	0.9304
22	0.9999	0.9997	0.9994	0.9990	0.9982	0.9970	0.9951	0.9924	0.9885	0.9833	0.9763	0.9673	0.9558
23	0.9999	0.9999	0.9998	0.9995	0.9992	0.9985	0.9975	0.9960	0.9938	0.9907	0.9863	0.9805	0.9730
24	1.0000	1.0000	0.9999	0.9998	0.9996	0.9993	0.9988	0.9980	0.9968	0.9950	0.9924	0.9888	0.9840
25	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9994	0.9990	0.9984	0.9974	0.9959	0.9938	0.9909
26	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9997	0.9995	0.9992	0.9987	0.9979	0.9967	0.9950
27	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9996	0.9994	0.9989	0.9983	0.9973
28	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9997	0.9995	0.9991	0.9986
29	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9996	0.9993
30	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9998	0.9997
31	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998
32	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
33	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

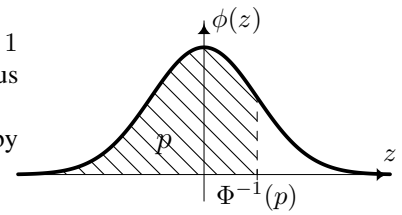
x	λ												
	16	17	18	19	20	21	22	23	24	25	30	35	40
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0004	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0014	0.0007	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0040	0.0021	0.0010	0.0005	0.0003	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0100	0.0054	0.0029	0.0015	0.0008	0.0004	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0220	0.0126	0.0071	0.0039	0.0021	0.0011	0.0006	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000
9	0.0433	0.0261	0.0154	0.0089	0.0050	0.0028	0.0015	0.0008	0.0004	0.0002	0.0000	0.0000	0.0000
10	0.0774	0.0491	0.0304	0.0183	0.0108	0.0063	0.0035	0.0020	0.0011	0.0006	0.0000	0.0000	0.0000
11	0.1270	0.0847	0.0549	0.0347	0.0214	0.0129	0.0076	0.0044	0.0025	0.0014	0.0001	0.0000	0.0000
12	0.1931	0.1350	0.0917	0.0606	0.0390	0.0245	0.0151	0.0091	0.0054	0.0031	0.0002	0.0000	0.0000
13	0.2745	0.2009	0.1426	0.0984	0.0661	0.0434	0.0278	0.0174	0.0107	0.0065	0.0004	0.0000	0.0000
14	0.3675	0.2808	0.2081	0.1497	0.1049	0.0716	0.0477	0.0311	0.0198	0.0124	0.0009	0.0000	0.0000
15	0.4667	0.3715	0.2867	0.2148	0.1565	0.1111	0.0769	0.0520	0.0344	0.0223	0.0019	0.0001	0.0000
16	0.5660	0.4677	0.3751	0.2920	0.2211	0.1629	0.1170	0.0821	0.0563	0.0377	0.0039	0.0003	0.0000
17	0.6593	0.5640	0.4686	0.3784	0.2970	0.2270	0.1690	0.1228	0.0871	0.0605	0.0073	0.0006	0.0000
18	0.7423	0.6550	0.5622	0.4695	0.3814	0.3017	0.2325	0.1748	0.1283	0.0920	0.0129	0.0012	0.0001
19	0.8122	0.7363	0.6509	0.5606	0.4703	0.3843	0.3060	0.2377	0.1803	0.1336	0.0219	0.0023	0.0002
20	0.8682	0.8055	0.7307	0.6472	0.5591	0.4710	0.3869	0.3101	0.2426	0.1855	0.0353	0.0043	0.0004
21	0.9108	0.8615	0.7991	0.7255	0.6437	0.5577	0.4716	0.3894	0.3139	0.2473	0.0544	0.0076	0.0007
22	0.9418	0.9047	0.8551	0.7931	0.7206	0.6405	0.5564	0.4723	0.3917	0.3175	0.0806	0.0128	0.0014
23	0.9633	0.9367	0.8989	0.8490	0.7875	0.7160	0.6374	0.5551	0.4728	0.3939	0.1146	0.0208	0.0026
24	0.9777	0.9594	0.9317	0.8933	0.8432	0.7822	0.7117	0.6346	0.5540	0.4734	0.1572	0.0324	0.0045
25	0.9869	0.9748	0.9554	0.9269	0.8878	0.8377	0.7771	0.7077	0.6319	0.5529	0.2084	0.0486	0.0076
26	0.9925	0.9848	0.9718	0.9514	0.9221	0.8826	0.8324	0.7723	0.7038	0.6294	0.2673	0.0705	0.0123
27	0.9959	0.9912	0.9827	0.9687	0.9475	0.9175	0.8775	0.8274	0.7677	0.7002	0.3329	0.0988	0.0193
28	0.9978	0.9950	0.9897	0.9805	0.9657	0.9436	0.9129	0.8726	0.8225	0.7634	0.4031	0.1343	0.0294
29	0.9989	0.9973	0.9941	0.9882	0.9782	0.9626	0.9398	0.9085	0.8679	0.8179	0.4757	0.1770	0.0432
30	0.9994	0.9986	0.9967	0.9930	0.9865	0.9758	0.9595	0.9360	0.9042	0.8633	0.5484	0.2269	0.0617
31	0.9997	0.9993	0.9982	0.9960	0.9919	0.9848	0.9735	0.9564	0.9322	0.8999	0.6186	0.2833	0.0855
32	0.9999	0.9996	0.9990	0.9978	0.9953	0.9907	0.9831	0.9711	0.9533	0.9285	0.6845	0.3449	0.1153
33	0.9999	0.9998	0.9995	0.9988	0.9973	0.9945	0.9895	0.9813	0.9686	0.9502	0.7444	0.4102	0.1514
34	1.0000	0.9999	0.9998	0.9994	0.9985	0.9968	0.9936	0.9882	0.9794	0.9662	0.7973	0.4775	0.1939
35	1.0000	1.0000	0.9999	0.9997	0.9992	0.9982	0.9962	0.9927	0.9868	0.9775	0.8426	0.5448	0.2424
36	1.0000	1.0000	0.9999	0.9998	0.9996	0.9990	0.9978	0.9956	0.9918	0.9854	0.8804	0.6102	0.2963
37	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9988	0.9974	0.9950	0.9908	0.9110	0.6721	0.3547
38	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9993	0.9985	0.9970	0.9943	0.9352	0.7291	0.4160
39	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9996	0.9992	0.9983	0.9966	0.9537	0.7802	0.4790
40	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9990	0.9980	0.9677	0.8249	0.5419
41	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9995	0.9988	0.9779	0.8631	0.6033
42	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9997	0.9993	0.9852	0.8950	0.6618
43	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9996	0.9903	0.9209	0.7162

→

Inverse $\Phi^{-1}(p)$ of the cumulative distribution function (quantiles)

The table below contains the quantiles of the standard normal distribution. For $0 < p < 1$ the quantile is the value of z for which $P\{Z \leq z\} = p$, where $Z \sim N(0, 1)$. Thus $z = \Phi^{-1}(p)$.

The table only contains the quantiles for $p \geq \frac{1}{2}$. For $p < \frac{1}{2}$ quantiles can be obtained by exploiting the symmetry of the normal distribution: $\Phi^{-1}(p) = -\Phi^{-1}(1 - p)$.



p	p									
	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
0.500	0.0000	0.0025	0.0050	0.0075	0.0100	0.0125	0.0150	0.0175	0.0201	0.0226
0.510	0.0251	0.0276	0.0301	0.0326	0.0351	0.0376	0.0401	0.0426	0.0451	0.0476
0.520	0.0502	0.0527	0.0552	0.0577	0.0602	0.0627	0.0652	0.0677	0.0702	0.0728
0.530	0.0753	0.0778	0.0803	0.0828	0.0853	0.0878	0.0904	0.0929	0.0954	0.0979
0.540	0.1004	0.1030	0.1055	0.1080	0.1105	0.1130	0.1156	0.1181	0.1206	0.1231
0.550	0.1257	0.1282	0.1307	0.1332	0.1358	0.1383	0.1408	0.1434	0.1459	0.1484
0.560	0.1510	0.1535	0.1560	0.1586	0.1611	0.1637	0.1662	0.1687	0.1713	0.1738
0.570	0.1764	0.1789	0.1815	0.1840	0.1866	0.1891	0.1917	0.1942	0.1968	0.1993
0.580	0.2019	0.2045	0.2070	0.2096	0.2121	0.2147	0.2173	0.2198	0.2224	0.2250
0.590	0.2275	0.2301	0.2327	0.2353	0.2378	0.2404	0.2430	0.2456	0.2482	0.2508
0.600	0.2533	0.2559	0.2585	0.2611	0.2637	0.2663	0.2689	0.2715	0.2741	0.2767
0.610	0.2793	0.2819	0.2845	0.2871	0.2898	0.2924	0.2950	0.2976	0.3002	0.3029
0.620	0.3055	0.3081	0.3107	0.3134	0.3160	0.3186	0.3213	0.3239	0.3266	0.3292
0.630	0.3319	0.3345	0.3372	0.3398	0.3425	0.3451	0.3478	0.3505	0.3531	0.3558
0.640	0.3585	0.3611	0.3638	0.3665	0.3692	0.3719	0.3745	0.3772	0.3799	0.3826
0.650	0.3853	0.3880	0.3907	0.3934	0.3961	0.3989	0.4016	0.4043	0.4070	0.4097
0.660	0.4125	0.4152	0.4179	0.4207	0.4234	0.4261	0.4289	0.4316	0.4344	0.4372
0.670	0.4399	0.4427	0.4454	0.4482	0.4510	0.4538	0.4565	0.4593	0.4621	0.4649
0.680	0.4677	0.4705	0.4733	0.4761	0.4789	0.4817	0.4845	0.4874	0.4902	0.4930
0.690	0.4959	0.4987	0.5015	0.5044	0.5072	0.5101	0.5129	0.5158	0.5187	0.5215
0.700	0.5244	0.5273	0.5302	0.5330	0.5359	0.5388	0.5417	0.5446	0.5476	0.5505
0.710	0.5534	0.5563	0.5592	0.5622	0.5651	0.5681	0.5710	0.5740	0.5769	0.5799
0.720	0.5828	0.5858	0.5888	0.5918	0.5948	0.5978	0.6008	0.6038	0.6068	0.6098
0.730	0.6128	0.6158	0.6189	0.6219	0.6250	0.6280	0.6311	0.6341	0.6372	0.6403
0.740	0.6433	0.6464	0.6495	0.6526	0.6557	0.6588	0.6620	0.6651	0.6682	0.6713
0.750	0.6745	0.6776	0.6808	0.6840	0.6871	0.6903	0.6935	0.6967	0.6999	0.7031
0.760	0.7063	0.7095	0.7128	0.7160	0.7192	0.7225	0.7257	0.7290	0.7323	0.7356
0.770	0.7388	0.7421	0.7454	0.7488	0.7521	0.7554	0.7588	0.7621	0.7655	0.7688
0.780	0.7722	0.7756	0.7790	0.7824	0.7858	0.7892	0.7926	0.7961	0.7995	0.8030
0.790	0.8064	0.8099	0.8134	0.8169	0.8204	0.8239	0.8274	0.8310	0.8345	0.8381
0.800	0.8416	0.8452	0.8488	0.8524	0.8560	0.8596	0.8633	0.8669	0.8705	0.8742
0.810	0.8779	0.8816	0.8853	0.8890	0.8927	0.8965	0.9002	0.9040	0.9078	0.9116
0.820	0.9154	0.9192	0.9230	0.9269	0.9307	0.9346	0.9385	0.9424	0.9463	0.9502
0.830	0.9542	0.9581	0.9621	0.9661	0.9701	0.9741	0.9782	0.9822	0.9863	0.9904
0.840	0.9945	0.9986	1.0027	1.0069	1.0110	1.0152	1.0194	1.0237	1.0279	1.0322
0.850	1.0364	1.0407	1.0450	1.0494	1.0537	1.0581	1.0625	1.0669	1.0714	1.0758
0.860	1.0803	1.0848	1.0893	1.0939	1.0985	1.1031	1.1077	1.1123	1.1170	1.1217
0.870	1.1264	1.1311	1.1359	1.1407	1.1455	1.1503	1.1552	1.1601	1.1650	1.1700
0.880	1.1750	1.1800	1.1850	1.1901	1.1952	1.2004	1.2055	1.2107	1.2160	1.2212
0.890	1.2265	1.2319	1.2372	1.2426	1.2481	1.2536	1.2591	1.2646	1.2702	1.2759
0.900	1.2816	1.2873	1.2930	1.2988	1.3047	1.3106	1.3165	1.3225	1.3285	1.3346
0.910	1.3408	1.3469	1.3532	1.3595	1.3658	1.3722	1.3787	1.3852	1.3917	1.3984
0.920	1.4051	1.4118	1.4187	1.4255	1.4325	1.4395	1.4466	1.4538	1.4611	1.4684
0.930	1.4758	1.4833	1.4909	1.4985	1.5063	1.5141	1.5220	1.5301	1.5382	1.5464
0.940	1.5548	1.5632	1.5718	1.5805	1.5893	1.5982	1.6072	1.6164	1.6258	1.6352
0.950	1.6449	1.6546	1.6646	1.6747	1.6849	1.6954	1.7060	1.7169	1.7279	1.7392
0.960	1.7507	1.7624	1.7744	1.7866	1.7991	1.8119	1.8250	1.8384	1.8522	1.8663
0.970	1.8808	1.8957	1.9110	1.9268	1.9431	1.9600	1.9774	1.9954	2.0141	2.0335
0.980	2.0537	2.0749	2.0969	2.1201	2.1444	2.1701	2.1973	2.2262	2.2571	2.2904
0.990	2.3263	2.3656	2.4089	2.4573	2.5121	2.5758	2.6521	2.7478	2.8782	3.0902

Selected quantiles $\Phi^{-1}(p)$ in high precision

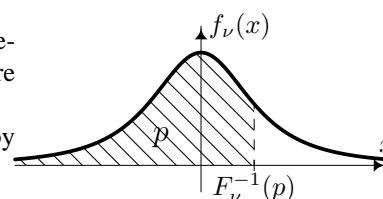
p	$\Phi^{-1}(p)$	p	$\Phi^{-1}(p)$	p	$\Phi^{-1}(p)$
0.9	1.2815515655	0.999	3.0902323062	0.99999	4.2648907939
0.95	1.6448536270	0.9995	3.2905267315	0.999995	4.4171734135
0.975	1.9599639845	0.99975	3.4807564043	0.9999975	4.5647877303
0.99	2.3263478740	0.9999	3.7190164855	0.999999	4.7534243088
0.995	2.5758293035	0.99995	3.8905918864	0.9999995	4.8916384757
0.9975	2.8070337683	0.999975	4.0556269811	0.99999975	5.0263128360

4 Student's t distribution

Inverse $F_{\nu}^{-1}(p)$ of the cumulative distribution function (quantiles)

The table below contains the quantiles of Student's t distribution with ν degrees of freedom. For $0 < p < 1$ the quantile is the value of x for which $\mathbb{P}\{X \leq x\} = p$, where $X \sim t(\nu)$. Thus $x = F_{\nu}^{-1}(p)$.

The table only contains the quantiles for $p \geq \frac{1}{2}$. For $p < \frac{1}{2}$ quantiles can be obtained by exploiting the symmetry of the t distribution: $F_{\nu}^{-1}(p) = -F_{\nu}^{-1}(1 - p)$.



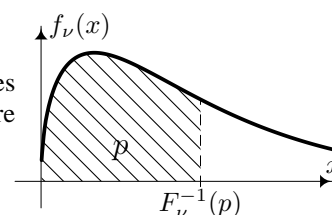
ν	p											
	0.6	0.7	0.75	0.8	0.85	0.9	0.95	0.975	0.99	0.995	0.999	0.9995
1	0.3249	0.7265	1.0000	1.3764	1.9626	3.0777	6.3138	12.706	31.821	63.657	318.31	636.62
2	0.2887	0.6172	0.8165	1.0607	1.3862	1.8856	2.9200	4.3027	6.9646	9.9248	22.327	31.599
3	0.2767	0.5844	0.7649	0.9785	1.2498	1.6377	2.3534	3.1824	4.5407	5.8409	10.215	12.924
4	0.2707	0.5686	0.7407	0.9410	1.1896	1.5332	2.1318	2.7764	3.7469	4.6041	7.1732	8.6103
5	0.2672	0.5594	0.7267	0.9195	1.1558	1.4759	2.0150	2.5706	3.3649	4.0321	5.8934	6.8688
6	0.2648	0.5534	0.7176	0.9057	1.1342	1.4398	1.9432	2.4469	3.1427	3.7074	5.2076	5.9588
7	0.2632	0.5491	0.7111	0.8960	1.1192	1.4149	1.8946	2.3646	2.9980	3.4995	4.7853	5.4079
8	0.2619	0.5459	0.7064	0.8889	1.1081	1.3968	1.8595	2.3060	2.8965	3.3554	4.5008	5.0413
9	0.2610	0.5435	0.7027	0.8834	1.0997	1.3830	1.8331	2.2622	2.8214	3.2498	4.2968	4.7809
10	0.2602	0.5415	0.6998	0.8791	1.0931	1.3722	1.8125	2.2281	2.7638	3.1693	4.1437	4.5869
11	0.2596	0.5399	0.6974	0.8755	1.0877	1.3634	1.7959	2.2010	2.7181	3.1058	4.0247	4.4370
12	0.2590	0.5386	0.6955	0.8726	1.0832	1.3562	1.7823	2.1788	2.6810	3.0545	3.9296	4.3178
13	0.2586	0.5375	0.6938	0.8702	1.0795	1.3502	1.7709	2.1604	2.6503	3.0123	3.8520	4.2208
14	0.2582	0.5366	0.6924	0.8681	1.0763	1.3450	1.7613	2.1448	2.6245	2.9768	3.7874	4.1405
15	0.2579	0.5357	0.6912	0.8662	1.0735	1.3406	1.7531	2.1314	2.6025	2.9467	3.7328	4.0728
16	0.2576	0.5350	0.6901	0.8647	1.0711	1.3368	1.7459	2.1199	2.5835	2.9208	3.6862	4.0150
17	0.2573	0.5344	0.6892	0.8633	1.0690	1.3334	1.7396	2.1098	2.5669	2.8982	3.6458	3.9651
18	0.2571	0.5338	0.6884	0.8620	1.0672	1.3304	1.7341	2.1009	2.5524	2.8784	3.6105	3.9216
19	0.2569	0.5333	0.6876	0.8610	1.0655	1.3277	1.7291	2.0930	2.5395	2.8609	3.5794	3.8834
20	0.2567	0.5329	0.6870	0.8600	1.0640	1.3253	1.7247	2.0860	2.5280	2.8453	3.5518	3.8495
21	0.2566	0.5325	0.6864	0.8591	1.0627	1.3232	1.7207	2.0796	2.5176	2.8314	3.5272	3.8193
22	0.2564	0.5321	0.6858	0.8583	1.0614	1.3212	1.7171	2.0739	2.5083	2.8188	3.5050	3.7921
23	0.2563	0.5317	0.6853	0.8575	1.0603	1.3195	1.7139	2.0687	2.4999	2.8073	3.4850	3.7676
24	0.2562	0.5314	0.6848	0.8569	1.0593	1.3178	1.7109	2.0639	2.4922	2.7969	3.4668	3.7454
25	0.2561	0.5312	0.6844	0.8562	1.0584	1.3163	1.7081	2.0595	2.4851	2.7874	3.4502	3.7251
26	0.2560	0.5309	0.6840	0.8557	1.0575	1.3150	1.7056	2.0555	2.4786	2.7787	3.4350	3.7066
27	0.2559	0.5306	0.6837	0.8551	1.0567	1.3137	1.7033	2.0518	2.4727	2.7707	3.4210	3.6896
28	0.2558	0.5304	0.6834	0.8546	1.0560	1.3125	1.7011	2.0484	2.4671	2.7633	3.4082	3.6739
29	0.2557	0.5302	0.6830	0.8542	1.0553	1.3114	1.6991	2.0452	2.4620	2.7564	3.3962	3.6594
30	0.2556	0.5300	0.6828	0.8538	1.0547	1.3104	1.6973	2.0423	2.4573	2.7500	3.3852	3.6460
31	0.2555	0.5298	0.6825	0.8534	1.0541	1.3095	1.6955	2.0395	2.4528	2.7440	3.3749	3.6335
32	0.2555	0.5297	0.6822	0.8530	1.0535	1.3086	1.6939	2.0369	2.4487	2.7385	3.3653	3.6218
33	0.2554	0.5295	0.6820	0.8526	1.0530	1.3077	1.6924	2.0345	2.4448	2.7333	3.3563	3.6109
34	0.2553	0.5294	0.6818	0.8523	1.0525	1.3070	1.6909	2.0322	2.4411	2.7284	3.3479	3.6007
35	0.2553	0.5292	0.6816	0.8520	1.0520	1.3062	1.6896	2.0301	2.4377	2.7238	3.3400	3.5911
36	0.2552	0.5291	0.6814	0.8517	1.0516	1.3055	1.6883	2.0281	2.4345	2.7195	3.3326	3.5821
37	0.2552	0.5289	0.6812	0.8514	1.0512	1.3049	1.6871	2.0262	2.4314	2.7154	3.3256	3.5737
38	0.2551	0.5288	0.6810	0.8512	1.0508	1.3042	1.6860	2.0244	2.4286	2.7116	3.3190	3.5657
39	0.2551	0.5287	0.6808	0.8509	1.0504	1.3036	1.6849	2.0227	2.4258	2.7079	3.3128	3.5581
40	0.2550	0.5286	0.6807	0.8507	1.0500	1.3031	1.6839	2.0211	2.4233	2.7045	3.3069	3.5510
41	0.2550	0.5285	0.6805	0.8505	1.0497	1.3025	1.6829	2.0195	2.4208	2.7012	3.3013	3.5442
42	0.2550	0.5284	0.6804	0.8503	1.0494	1.3020	1.6820	2.0181	2.4185	2.6981	3.2960	3.5377
43	0.2549	0.5283	0.6802	0.8501	1.0491	1.3016	1.6811	2.0167	2.4163	2.6951	3.2909	3.5316
44	0.2549	0.5282	0.6801	0.8499	1.0488	1.3011	1.6802	2.0154	2.4141	2.6923	3.2861	3.5258
45	0.2549	0.5281	0.6800	0.8497	1.0485	1.3006	1.6794	2.0141	2.4121	2.6896	3.2815	3.5203
46	0.2548	0.5281	0.6799	0.8495	1.0483	1.3002	1.6787	2.0129	2.4102	2.6870	3.2771	3.5150
47	0.2548	0.5280	0.6797	0.8493	1.0480	1.2998	1.6779	2.0117	2.4083	2.6846	3.2729	3.5099
48	0.2548	0.5279	0.6796	0.8492	1.0478	1.2994	1.6772	2.0106	2.4066	2.6822	3.2689	3.5051
49	0.2547	0.5278	0.6795	0.8490	1.0475	1.2991	1.6766	2.0096	2.4049	2.6800	3.2651	3.5004

ν	0.6	0.7	0.75	0.8	0.85	0.9	0.95	0.975	0.99	0.995	0.999	0.9995
50	0.2547	0.5278	0.6794	0.8489	1.0473	1.2987	1.6759	2.0086	2.4033	2.6778	3.2614	3.4960
51	0.2547	0.5277	0.6793	0.8487	1.0471	1.2984	1.6753	2.0076	2.4017	2.6757	3.2579	3.4918
52	0.2546	0.5276	0.6792	0.8486	1.0469	1.2980	1.6747	2.0066	2.4002	2.6737	3.2545	3.4877
53	0.2546	0.5276	0.6791	0.8485	1.0467	1.2977	1.6741	2.0057	2.3988	2.6718	3.2513	3.4838
54	0.2546	0.5275	0.6791	0.8483	1.0465	1.2974	1.6736	2.0049	2.3974	2.6700	3.2481	3.4800
55	0.2546	0.5275	0.6790	0.8482	1.0463	1.2971	1.6730	2.0040	2.3961	2.6682	3.2451	3.4764
56	0.2546	0.5274	0.6789	0.8481	1.0461	1.2969	1.6725	2.0032	2.3948	2.6665	3.2423	3.4729
57	0.2545	0.5273	0.6788	0.8480	1.0459	1.2966	1.6720	2.0025	2.3936	2.6649	3.2395	3.4696
58	0.2545	0.5273	0.6787	0.8479	1.0458	1.2963	1.6716	2.0017	2.3924	2.6633	3.2368	3.4663
59	0.2545	0.5272	0.6787	0.8478	1.0456	1.2961	1.6711	2.0010	2.3912	2.6618	3.2342	3.4632
60	0.2545	0.5272	0.6786	0.8477	1.0455	1.2958	1.6706	2.0003	2.3901	2.6603	3.2317	3.4602
61	0.2545	0.5272	0.6785	0.8476	1.0453	1.2956	1.6702	1.9996	2.3890	2.6589	3.2293	3.4573
62	0.2544	0.5271	0.6785	0.8475	1.0452	1.2954	1.6698	1.9990	2.3880	2.6575	3.2270	3.4545
63	0.2544	0.5271	0.6784	0.8474	1.0450	1.2951	1.6694	1.9983	2.3870	2.6561	3.2247	3.4518
64	0.2544	0.5270	0.6783	0.8473	1.0449	1.2949	1.6690	1.9977	2.3860	2.6549	3.2225	3.4491
65	0.2544	0.5270	0.6783	0.8472	1.0448	1.2947	1.6686	1.9971	2.3851	2.6536	3.2204	3.4466
66	0.2544	0.5269	0.6782	0.8471	1.0446	1.2945	1.6683	1.9966	2.3842	2.6524	3.2184	3.4441
67	0.2544	0.5269	0.6782	0.8470	1.0445	1.2943	1.6679	1.9960	2.3833	2.6512	3.2164	3.4417
68	0.2543	0.5269	0.6781	0.8469	1.0444	1.2941	1.6676	1.9955	2.3824	2.6501	3.2145	3.4394
69	0.2543	0.5268	0.6781	0.8469	1.0443	1.2939	1.6672	1.9949	2.3816	2.6490	3.2126	3.4372
70	0.2543	0.5268	0.6780	0.8468	1.0442	1.2938	1.6669	1.9944	2.3808	2.6479	3.2108	3.4350
71	0.2543	0.5268	0.6780	0.8467	1.0441	1.2936	1.6666	1.9939	2.3800	2.6469	3.2090	3.4329
72	0.2543	0.5267	0.6779	0.8466	1.0440	1.2934	1.6663	1.9935	2.3793	2.6459	3.2073	3.4308
73	0.2543	0.5267	0.6779	0.8466	1.0438	1.2933	1.6660	1.9930	2.3785	2.6449	3.2057	3.4289
74	0.2543	0.5267	0.6778	0.8465	1.0437	1.2931	1.6657	1.9925	2.3778	2.6439	3.2041	3.4269
75	0.2542	0.5266	0.6778	0.8464	1.0436	1.2929	1.6654	1.9921	2.3771	2.6430	3.2025	3.4250
76	0.2542	0.5266	0.6777	0.8464	1.0436	1.2928	1.6652	1.9917	2.3764	2.6421	3.2010	3.4232
77	0.2542	0.5266	0.6777	0.8463	1.0435	1.2926	1.6649	1.9913	2.3758	2.6412	3.1995	3.4214
78	0.2542	0.5266	0.6776	0.8463	1.0434	1.2925	1.6646	1.9908	2.3751	2.6403	3.1980	3.4197
79	0.2542	0.5265	0.6776	0.8462	1.0433	1.2924	1.6644	1.9905	2.3745	2.6395	3.1966	3.4180
80	0.2542	0.5265	0.6776	0.8461	1.0432	1.2922	1.6641	1.9901	2.3739	2.6387	3.1953	3.4163
81	0.2542	0.5265	0.6775	0.8461	1.0431	1.2921	1.6639	1.9897	2.3733	2.6379	3.1939	3.4147
82	0.2542	0.5264	0.6775	0.8460	1.0430	1.2920	1.6636	1.9893	2.3727	2.6371	3.1926	3.4132
83	0.2542	0.5264	0.6775	0.8460	1.0429	1.2918	1.6634	1.9890	2.3721	2.6364	3.1913	3.4116
84	0.2542	0.5264	0.6774	0.8459	1.0429	1.2917	1.6632	1.9886	2.3716	2.6356	3.1901	3.4102
85	0.2541	0.5264	0.6774	0.8459	1.0428	1.2916	1.6630	1.9883	2.3710	2.6349	3.1889	3.4087
86	0.2541	0.5263	0.6774	0.8458	1.0427	1.2915	1.6628	1.9879	2.3705	2.6342	3.1877	3.4073
87	0.2541	0.5263	0.6773	0.8458	1.0426	1.2914	1.6626	1.9876	2.3700	2.6335	3.1866	3.4059
88	0.2541	0.5263	0.6773	0.8457	1.0426	1.2912	1.6624	1.9873	2.3695	2.6329	3.1854	3.4045
89	0.2541	0.5263	0.6773	0.8457	1.0425	1.2911	1.6622	1.9870	2.3690	2.6322	3.1843	3.4032
90	0.2541	0.5263	0.6772	0.8456	1.0424	1.2910	1.6620	1.9867	2.3685	2.6316	3.1833	3.4019
91	0.2541	0.5262	0.6772	0.8456	1.0424	1.2909	1.6618	1.9864	2.3680	2.6309	3.1822	3.4007
92	0.2541	0.5262	0.6772	0.8455	1.0423	1.2908	1.6616	1.9861	2.3676	2.6303	3.1812	3.3994
93	0.2541	0.5262	0.6771	0.8455	1.0422	1.2907	1.6614	1.9858	2.3671	2.6297	3.1802	3.3982
94	0.2541	0.5262	0.6771	0.8455	1.0422	1.2906	1.6612	1.9855	2.3667	2.6291	3.1792	3.3971
95	0.2541	0.5262	0.6771	0.8454	1.0421	1.2905	1.6611	1.9853	2.3662	2.6286	3.1782	3.3959
96	0.2541	0.5261	0.6771	0.8454	1.0421	1.2904	1.6609	1.9850	2.3658	2.6280	3.1773	3.3948
97	0.2540	0.5261	0.6770	0.8453	1.0420	1.2903	1.6607	1.9847	2.3654	2.6275	3.1764	3.3937
98	0.2540	0.5261	0.6770	0.8453	1.0419	1.2902	1.6606	1.9845	2.3650	2.6269	3.1755	3.3926
99	0.2540	0.5261	0.6770	0.8453	1.0419	1.2902	1.6604	1.9842	2.3646	2.6264	3.1746	3.3915
100	0.2540	0.5261	0.6770	0.8452	1.0418	1.2901	1.6602	1.9840	2.3642	2.6259	3.1737	3.3905
110	0.2540	0.5259	0.6767	0.8449	1.0413	1.2893	1.6588	1.9818	2.3607	2.6213	3.1660	3.3812
120	0.2539	0.5258	0.6765	0.8446	1.0409	1.2886	1.6577	1.9799	2.3578	2.6174	3.1595	3.3735
150	0.2538	0.5255	0.6761	0.8440	1.0400	1.2872	1.6551	1.9759	2.3515	2.6090	3.1455	3.3566
200	0.2537	0.5252	0.6757	0.8434	1.0391	1.2858	1.6525	1.9719	2.3451	2.6006	3.1315	3.3398
500	0.2535	0.5247	0.6750	0.8423	1.0375	1.2832	1.6479	1.9647	2.3338	2.5857	3.1066	3.3101

5 χ^2 distribution

Inverse $F_\nu^{-1}(p)$ of the cumulative distribution function (quantiles)

The table below contains the quantiles of the χ^2 (chi-squared) distribution with ν degrees of freedom. For $0 < p < 1$ the quantile is the value of x for which $\mathbb{P}\{X \leq x\} = p$, where $X \sim \chi^2(\nu)$. Thus $x = F_\nu^{-1}(p)$.



ν	p											
	0.005	0.01	0.025	0.05	0.1	0.5	0.9	0.95	0.975	0.99	0.995	0.999
1	0.0000	0.0002	0.0010	0.0039	0.0158	0.4549	2.7055	3.8415	5.0239	6.6349	7.8794	10.828
2	0.0100	0.0201	0.0506	0.1026	0.2107	1.3863	4.6052	5.9915	7.3778	9.2103	10.597	13.816
3	0.0717	0.1148	0.2158	0.3518	0.5844	2.3660	6.2514	7.8147	9.3484	11.345	12.838	16.266
4	0.2070	0.2971	0.4844	0.7107	1.0636	3.3567	7.7794	9.4877	11.143	13.277	14.860	18.467
5	0.4117	0.5543	0.8312	1.1455	1.6103	4.3515	9.2364	11.070	12.833	15.086	16.750	20.515
6	0.6757	0.8721	1.2373	1.6354	2.2041	5.3481	10.645	12.592	14.449	16.812	18.548	22.458
7	0.9893	1.2390	1.6899	2.1673	2.8331	6.3458	12.017	14.067	16.013	18.475	20.278	24.322
8	1.3444	1.6465	2.1797	2.7326	3.4895	7.3441	13.362	15.507	17.535	20.090	21.955	26.124
9	1.7349	2.0879	2.7004	3.3251	4.1682	8.3428	14.684	16.919	19.023	21.666	23.589	27.877
10	2.1559	2.5582	3.2470	3.9403	4.8652	9.3418	15.987	18.307	20.483	23.209	25.188	29.588
11	2.6032	3.0535	3.8157	4.5748	5.5778	10.341	17.275	19.675	21.920	24.725	26.757	31.264
12	3.0738	3.5706	4.4038	5.2260	6.3038	11.340	18.549	21.026	23.337	26.217	28.300	32.909
13	3.5650	4.1069	5.0088	5.8919	7.0415	12.340	19.812	22.362	24.736	27.688	29.819	34.528
14	4.0747	4.6604	5.6287	6.5706	7.7895	13.339	21.064	23.685	26.119	29.141	31.319	36.123
15	4.6009	5.2293	6.2621	7.2609	8.5468	14.339	22.307	24.996	27.488	30.578	32.801	37.697
16	5.1422	5.8122	6.9077	7.9616	9.3122	15.338	23.542	26.296	28.845	32.000	34.267	39.252
17	5.6972	6.4078	7.5642	8.6718	10.085	16.338	24.769	27.587	30.191	33.409	35.718	40.790
18	6.2648	7.0149	8.2307	9.3905	10.865	17.338	25.989	28.869	31.526	34.805	37.156	42.312
19	6.8440	7.6327	8.9065	10.117	11.651	18.338	27.204	30.144	32.852	36.191	38.582	43.820
20	7.4338	8.2604	9.5908	10.851	12.443	19.337	28.412	31.410	34.170	37.566	39.997	45.315
21	8.0337	8.8972	10.283	11.591	13.240	20.337	29.615	32.671	35.479	38.932	41.401	46.797
22	8.6427	9.5425	10.982	12.338	14.041	21.337	30.813	33.924	36.781	40.289	42.796	48.268
23	9.2604	10.196	11.689	13.091	14.848	22.337	32.007	35.172	38.076	41.638	44.181	49.728
24	9.8862	10.856	12.401	13.848	15.659	23.337	33.196	36.415	39.364	42.980	45.559	51.179
25	10.520	11.524	13.120	14.611	16.473	24.337	34.382	37.652	40.646	44.314	46.928	52.620
26	11.160	12.198	13.844	15.379	17.292	25.336	35.563	38.885	41.923	45.642	48.290	54.052
27	11.808	12.879	14.573	16.151	18.114	26.336	36.741	40.113	43.195	46.963	49.645	55.476
28	12.461	13.565	15.308	16.928	18.939	27.336	37.916	41.337	44.461	48.278	50.993	56.892
29	13.121	14.256	16.047	17.708	19.768	28.336	39.087	42.557	45.722	49.588	52.336	58.301
30	13.787	14.953	16.791	18.493	20.599	29.336	40.256	43.773	46.979	50.892	53.672	59.703
31	14.458	15.655	17.539	19.281	21.434	30.336	41.422	44.985	48.232	52.191	55.003	61.098
32	15.134	16.362	18.291	20.072	22.271	31.336	42.585	46.194	49.480	53.486	56.328	62.487
33	15.815	17.074	19.047	20.867	23.110	32.336	43.745	47.400	50.725	54.776	57.648	63.870
34	16.501	17.789	19.806	21.664	23.952	33.336	44.903	48.602	51.966	56.061	58.964	65.247
35	17.192	18.509	20.569	22.465	24.797	34.336	46.059	49.802	53.203	57.342	60.275	66.619
36	17.887	19.233	21.336	23.269	25.643	35.336	47.212	50.998	54.437	58.619	61.581	67.985
37	18.586	19.960	22.106	24.075	26.492	36.336	48.363	52.192	55.668	59.893	62.883	69.346
38	19.289	20.691	22.878	24.884	27.343	37.335	49.513	53.384	56.896	61.162	64.181	70.703
39	19.996	21.426	23.654	25.695	28.196	38.335	50.660	54.572	58.120	62.428	65.476	72.055
40	20.707	22.164	24.433	26.509	29.051	39.335	51.805	55.758	59.342	63.691	66.766	73.402
41	21.421	22.906	25.215	27.326	29.907	40.335	52.949	56.942	60.561	64.950	68.053	74.745
42	22.138	23.650	25.999	28.144	30.765	41.335	54.090	58.124	61.777	66.206	69.336	76.084
43	22.859	24.398	26.785	28.965	31.625	42.335	55.230	59.304	62.990	67.459	70.616	77.419
44	23.584	25.148	27.575	29.787	32.487	43.335	56.369	60.481	64.201	68.710	71.893	78.750
45	24.311	25.901	28.366	30.612	33.350	44.335	57.505	61.656	65.410	69.957	73.166	80.077
46	25.041	26.657	29.160	31.439	34.215	45.335	58.641	62.830	66.617	71.201	74.437	81.400
47	25.775	27.416	29.956	32.268	35.081	46.335	59.774	64.001	67.821	72.443	75.704	82.720
48	26.511	28.177	30.755	33.098	35.949	47.335	60.907	65.171	69.023	73.683	76.969	84.037

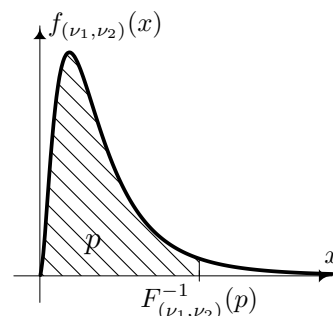
ν	0.005	0.01	0.025	0.05	0.1	0.5	0.9	0.95	0.975	0.99	0.995	0.999
49	27.249	28.941	31.555	33.930	36.818	48.335	62.038	66.339	70.222	74.919	78.231	85.351
50	27.991	29.707	32.357	34.764	37.689	49.335	63.167	67.505	71.420	76.154	79.490	86.661
51	28.735	30.475	33.162	35.600	38.560	50.335	64.295	68.669	72.616	77.386	80.747	87.968
52	29.481	31.246	33.968	36.437	39.433	51.335	65.422	69.832	73.810	78.616	82.001	89.272
53	30.230	32.018	34.776	37.276	40.308	52.335	66.548	70.993	75.002	79.843	83.253	90.573
54	30.981	32.793	35.586	38.116	41.183	53.335	67.673	72.153	76.192	81.069	84.502	91.872
55	31.735	33.570	36.398	38.958	42.060	54.335	68.796	73.311	77.380	82.292	85.749	93.168
56	32.490	34.350	37.212	39.801	42.937	55.335	69.919	74.468	78.567	83.513	86.994	94.461
57	33.248	35.131	38.027	40.646	43.816	56.335	71.040	75.624	79.752	84.733	88.236	95.751
58	34.008	35.913	38.844	41.492	44.696	57.335	72.160	76.778	80.936	85.950	89.477	97.039
59	34.770	36.698	39.662	42.339	45.577	58.335	73.279	77.931	82.117	87.166	90.715	98.324
60	35.534	37.485	40.482	43.188	46.459	59.335	74.397	79.082	83.298	88.379	91.952	99.607
61	36.301	38.273	41.303	44.038	47.342	60.335	75.514	80.232	84.476	89.591	93.186	100.89
62	37.068	39.063	42.126	44.889	48.226	61.335	76.630	81.381	85.654	90.802	94.419	102.17
63	37.838	39.855	42.950	45.741	49.111	62.335	77.745	82.529	86.830	92.010	95.649	103.44
64	38.610	40.649	43.776	46.595	49.996	63.335	78.860	83.675	88.004	93.217	96.878	104.72
65	39.383	41.444	44.603	47.450	50.883	64.335	79.973	84.821	89.177	94.422	98.105	105.99
66	40.158	42.240	45.431	48.305	51.770	65.335	81.085	85.965	90.349	95.626	99.330	107.26
67	40.935	43.038	46.261	49.162	52.659	66.335	82.197	87.108	91.519	96.828	100.55	108.53
68	41.713	43.838	47.092	50.020	53.548	67.335	83.308	88.250	92.689	98.028	101.78	109.79
69	42.494	44.639	47.924	50.879	54.438	68.334	84.418	89.391	93.856	99.228	103.00	111.06
70	43.275	45.442	48.758	51.739	55.329	69.334	85.527	90.531	95.023	100.43	104.21	112.32
71	44.058	46.246	49.592	52.600	56.221	70.334	86.635	91.670	96.189	101.62	105.43	113.58
72	44.843	47.051	50.428	53.462	57.113	71.334	87.743	92.808	97.353	102.82	106.65	114.84
73	45.629	47.858	51.265	54.325	58.006	72.334	88.850	93.945	98.516	104.01	107.86	116.09
74	46.417	48.666	52.103	55.189	58.900	73.334	89.956	95.081	99.678	105.20	109.07	117.35
75	47.206	49.475	52.942	56.054	59.795	74.334	91.061	96.217	100.84	106.39	110.29	118.60
76	47.997	50.286	53.782	56.920	60.690	75.334	92.166	97.351	102.00	107.58	111.50	119.85
77	48.788	51.097	54.623	57.786	61.586	76.334	93.270	98.484	103.16	108.77	112.70	121.10
78	49.582	51.910	55.466	58.654	62.483	77.334	94.374	99.617	104.32	109.96	113.91	122.35
79	50.376	52.725	56.309	59.522	63.380	78.334	95.476	100.75	105.47	111.14	115.12	123.59
80	51.172	53.540	57.153	60.391	64.278	79.334	96.578	101.88	106.63	112.33	116.32	124.84
81	51.969	54.357	57.998	61.261	65.176	80.334	97.680	103.01	107.78	113.51	117.52	126.08
82	52.767	55.174	58.845	62.132	66.076	81.334	98.780	104.14	108.94	114.69	118.73	127.32
83	53.567	55.993	59.692	63.004	66.976	82.334	99.880	105.27	110.09	115.88	119.93	128.56
84	54.368	56.813	60.540	63.876	67.876	83.334	100.98	106.39	111.24	117.06	121.13	129.80
85	55.170	57.634	61.389	64.749	68.777	84.334	102.08	107.52	112.39	118.24	122.32	131.04
86	55.973	58.456	62.239	65.623	69.679	85.334	103.18	108.65	113.54	119.41	123.52	132.28
87	56.777	59.279	63.089	66.498	70.581	86.334	104.28	109.77	114.69	120.59	124.72	133.51
88	57.582	60.103	63.941	67.373	71.484	87.334	105.37	110.90	115.84	121.77	125.91	134.75
89	58.389	60.928	64.793	68.249	72.387	88.334	106.47	112.02	116.99	122.94	127.11	135.98
90	59.196	61.754	65.647	69.126	73.291	89.334	107.57	113.15	118.14	124.12	128.30	137.21
91	60.005	62.581	66.501	70.003	74.196	90.334	108.66	114.27	119.28	125.29	129.49	138.44
92	60.815	63.409	67.356	70.882	75.100	91.334	109.76	115.39	120.43	126.46	130.68	139.67
93	61.625	64.238	68.211	71.760	76.006	92.334	110.85	116.51	121.57	127.63	131.87	140.89
94	62.437	65.068	69.068	72.640	76.912	93.334	111.94	117.63	122.72	128.80	133.06	142.12
95	63.250	65.898	69.925	73.520	77.818	94.334	113.04	118.75	123.86	129.97	134.25	143.34
96	64.063	66.730	70.783	74.401	78.725	95.334	114.13	119.87	125.00	131.14	135.43	144.57
97	64.878	67.562	71.642	75.282	79.633	96.334	115.22	120.99	126.14	132.31	136.62	145.79
98	65.694	68.396	72.501	76.164	80.541	97.334	116.32	122.11	127.28	133.48	137.80	147.01
99	66.510	69.230	73.361	77.046	81.449	98.334	117.41	123.23	128.42	134.64	138.99	148.23
100	67.328	70.065	74.222	77.929	82.358	99.334	118.50	124.34	129.56	135.81	140.17	149.45
110	75.550	78.458	82.867	86.792	91.471	109.33	129.39	135.48	140.92	147.41	151.95	161.58
120	83.852	86.923	91.573	95.705	100.62	119.33	140.23	146.57	152.21	158.95	163.65	173.62
150	109.14	112.67	117.98	122.69	128.28	149.33	172.58	179.58	185.80	193.21	198.36	209.26
200	152.24	156.43	162.73	168.28	174.84	199.33	226.02	233.99	241.06	249.45	255.26	267.54
500	422.30	429.39	439.94	449.15	459.93	499.33	540.93	553.13	563.85	576.49	585.21	603.45

6 F distribution

Inverse $F_{(\nu_1, \nu_2)}^{-1}(p)$ of the cumulative distribution function (quantiles)

The table below contains the quantiles of the F distribution with ν_1 and ν_2 degrees of freedom. For $0 < p < 1$ the quantile is the value of x for which $\mathbb{P}\{X \leq x\} = p$, where $X \sim F(\nu_1, \nu_2)$. Thus $x = F_{(\nu_1, \nu_2)}^{-1}(p)$.

The table only contains the quantiles for $p \geq \frac{1}{2}$. For $p < \frac{1}{2}$ quantiles can be obtained by exploiting the symmetry of the F distribution: $F_{(\nu_1, \nu_2)}^{-1}(p) = \frac{1}{F_{(\nu_2, \nu_1)}^{-1}(1-p)}$.



ν_1	ν_2	p					ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
		0.9	0.95	0.975	0.99	0.995							
1	1	39.863	161.45	647.79	4052.2	16211	2	8	3.1131	4.4590	6.0595	8.6491	11.042
	2	8.5263	18.513	38.506	98.503	198.50		9	3.0065	4.2565	5.7147	8.0215	10.107
	3	5.5383	10.128	17.443	34.116	55.552		10	2.9245	4.1028	5.4564	7.5594	9.4270
	4	4.5448	7.7086	12.218	21.198	31.333		11	2.8595	3.9823	5.2559	7.2057	8.9122
	5	4.0604	6.6079	10.007	16.258	22.785		12	2.8068	3.8853	5.0959	6.9266	8.5096
	6	3.7759	5.9874	8.8131	13.745	18.635		13	2.7632	3.8056	4.9653	6.7010	8.1865
	7	3.5894	5.5914	8.0727	12.246	16.236		14	2.7265	3.7389	4.8567	6.5149	7.9216
	8	3.4579	5.3177	7.5709	11.259	14.688		15	2.6952	3.6823	4.7650	6.3589	7.7008
	9	3.3603	5.1174	7.2093	10.561	13.614		16	2.6682	3.6337	4.6867	6.2262	7.5138
	10	3.2850	4.9646	6.9367	10.044	12.826		17	2.6446	3.5915	4.6189	6.1121	7.3536
	11	3.2252	4.8443	6.7241	9.6460	12.226		18	2.6239	3.5546	4.5597	6.0129	7.2148
	12	3.1765	4.7472	6.5538	9.3302	11.754		19	2.6056	3.5219	4.5075	5.9259	7.0935
	13	3.1362	4.6672	6.4143	9.0738	11.374		20	2.5893	3.4928	4.4613	5.8489	6.9865
	14	3.1022	4.6001	6.2979	8.8616	11.060		21	2.5746	3.4668	4.4199	5.7804	6.8914
	15	3.0732	4.5431	6.1995	8.6831	10.798		22	2.5613	3.4434	4.3828	5.7190	6.8064
	16	3.0481	4.4940	6.1151	8.5310	10.575		23	2.5493	3.4221	4.3492	5.6637	6.7300
	17	3.0262	4.4513	6.0420	8.3997	10.384		24	2.5383	3.4028	4.3187	5.6136	6.6609
	18	3.0070	4.4139	5.9781	8.2854	10.218		25	2.5283	3.3852	4.2909	5.5680	6.5982
	19	2.9899	4.3807	5.9216	8.1849	10.073		30	2.4887	3.3158	4.1821	5.3903	6.3547
	20	2.9747	4.3512	5.8715	8.0960	9.9439		35	2.4609	3.2674	4.1065	5.2679	6.1878
21	2.9610	4.3248	5.8266	8.0166	9.8295	40	2.4404	3.2317	4.0510	5.1785	6.0664		
22	2.9486	4.3009	5.7863	7.9454	9.7271	45	2.4245	3.2043	4.0085	5.1103	5.9741		
23	2.9374	4.2793	5.7498	7.8811	9.6348	50	2.4120	3.1826	3.9749	5.0566	5.9016		
24	2.9271	4.2597	5.7166	7.8229	9.5513	60	2.3933	3.1504	3.9253	4.9774	5.7950		
25	2.9177	4.2417	5.6864	7.7698	9.4753	70	2.3800	3.1277	3.8903	4.9219	5.7204		
30	2.8807	4.1709	5.5675	7.5625	9.1797	80	2.3701	3.1108	3.8643	4.8807	5.6652		
35	2.8547	4.1213	5.4848	7.4191	8.9763	100	2.3564	3.0873	3.8284	4.8239	5.5892		
40	2.8354	4.0847	5.4239	7.3141	8.8279	120	2.3473	3.0718	3.8046	4.7865	5.5393		
45	2.8205	4.0566	5.3773	7.2339	8.7148	150	2.3383	3.0564	3.7811	4.7495	5.4900		
50	2.8087	4.0343	5.3403	7.1706	8.6258	200	2.3293	3.0411	3.7578	4.7129	5.4412		
60	2.7911	4.0012	5.2856	7.0771	8.4946	500	2.3132	3.0138	3.7162	4.6478	5.3549		
70	2.7786	3.9778	5.2470	7.0114	8.4027	$+\infty$	2.3026	2.9957	3.6889	4.6052	5.2983		
80	2.7693	3.9604	5.2184	6.9627	8.3346	3	1	53.593	215.71	864.16	5403.4	21615	
100	2.7564	3.9361	5.1786	6.8953	8.2406		2	9.1618	19.164	39.165	99.166	199.17	
120	2.7478	3.9201	5.1523	6.8509	8.1788		3	5.3908	9.2766	15.439	29.457	47.467	
150	2.7393	3.9042	5.1263	6.8069	8.1177		4	4.1909	6.5914	9.9792	16.694	24.259	
200	2.7308	3.8884	5.1004	6.7633	8.0572		5	3.6195	5.4095	7.7636	12.060	16.530	
500	2.7156	3.8601	5.0543	6.6858	7.9498		6	3.2888	4.7571	6.5988	9.7795	12.917	
$+\infty$	2.7055	3.8415	5.0239	6.6349	7.8794		7	3.0741	4.3468	5.8898	8.4513	10.882	
2	1	49.500	199.50	799.50	4999.5		19999	8	2.9238	4.0662	5.4160	7.5910	9.5965
	2	9.0000	19.000	39.000	99.000		199.00	9	2.8129	3.8625	5.0781	6.9919	8.7171
	3	5.4624	9.5521	16.044	30.817		49.799	10	2.7277	3.7083	4.8256	6.5523	8.0807
	4	4.3246	6.9443	10.649	18.000		26.284	11	2.6602	3.5874	4.6300	6.2167	7.6004
	5	3.7797	5.7861	8.4336	13.274		18.314	12	2.6055	3.4903	4.4742	5.9525	7.2258
	6	3.4633	5.1433	7.2599	10.925		14.544	13	2.5603	3.4105	4.3472	5.7394	6.9258
	7	3.2574	4.7374	6.5415	9.5466		12.404	14	2.5222	3.3439	4.2417	5.5639	6.6804

→

→

ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
3	15	2.4898	3.2874	4.1528	5.4170	6.4760
	16	2.4618	3.2389	4.0768	5.2922	6.3034
	17	2.4374	3.1968	4.0112	5.1850	6.1556
	18	2.4160	3.1599	3.9539	5.0919	6.0278
	19	2.3970	3.1274	3.9034	5.0103	5.9161
	20	2.3801	3.0984	3.8587	4.9382	5.8177
	21	2.3649	3.0725	3.8188	4.8740	5.7304
	22	2.3512	3.0491	3.7829	4.8166	5.6524
	23	2.3387	3.0280	3.7505	4.7649	5.5823
	24	2.3274	3.0088	3.7211	4.7181	5.5190
	25	2.3170	2.9912	3.6943	4.6755	5.4615
	30	2.2761	2.9223	3.5894	4.5097	5.2388
	35	2.2474	2.8742	3.5166	4.3957	5.0865
	40	2.2261	2.8387	3.4633	4.3126	4.9758
	45	2.2097	2.8115	3.4224	4.2492	4.8918
	50	2.1967	2.7900	3.3902	4.1993	4.8259
	60	2.1774	2.7581	3.3425	4.1259	4.7290
	70	2.1637	2.7355	3.3090	4.0744	4.6613
	80	2.1535	2.7188	3.2841	4.0363	4.6113
	100	2.1394	2.6955	3.2496	3.9837	4.5424
	120	2.1300	2.6802	3.2269	3.9491	4.4972
	150	2.1207	2.6649	3.2044	3.9149	4.4525
	200	2.1114	2.6498	3.1820	3.8810	4.4084
	500	2.0948	2.6227	3.1423	3.8210	4.3304
	$+\infty$	2.0838	2.6049	3.1161	3.7816	4.2794
4	1	55.833	224.58	899.58	5624.6	22500
	2	9.2434	19.247	39.248	99.249	199.25
	3	5.3426	9.1172	15.101	28.710	46.195
	4	4.1072	6.3882	9.6045	15.977	23.155
	5	3.5202	5.1922	7.3879	11.392	15.556
	6	3.1808	4.5337	6.2272	9.1483	12.028
	7	2.9605	4.1203	5.5226	7.8466	10.050
	8	2.8064	3.8379	5.0526	7.0061	8.8051
	9	2.6927	3.6331	4.7181	6.4221	7.9559
	10	2.6053	3.4780	4.4683	5.9943	7.3428
	11	2.5362	3.3567	4.2751	5.6683	6.8809
	12	2.4801	3.2592	4.1212	5.4120	6.5211
	13	2.4337	3.1791	3.9959	5.2053	6.2335
	14	2.3947	3.1122	3.8919	5.0354	5.9984
	15	2.3614	3.0556	3.8043	4.8932	5.8029
	16	2.3327	3.0069	3.7294	4.7726	5.6378
	17	2.3077	2.9647	3.6648	4.6690	5.4967
	18	2.2858	2.9277	3.6083	4.5790	5.3746
	19	2.2663	2.8951	3.5587	4.5003	5.2681
	20	2.2489	2.8661	3.5147	4.4307	5.1743
	21	2.2333	2.8401	3.4754	4.3688	5.0911
	22	2.2193	2.8167	3.4401	4.3134	5.0168
	23	2.2065	2.7955	3.4083	4.2636	4.9500
	24	2.1949	2.7763	3.3794	4.2184	4.8898
	25	2.1842	2.7587	3.3530	4.1774	4.8351
30	2.1422	2.6896	3.2499	4.0179	4.6234	
35	2.1128	2.6415	3.1785	3.9082	4.4788	
40	2.0909	2.6060	3.1261	3.8283	4.3738	
45	2.0742	2.5787	3.0860	3.7674	4.2941	
50	2.0608	2.5572	3.0544	3.7195	4.2316	
60	2.0410	2.5252	3.0077	3.6490	4.1399	
70	2.0269	2.5027	2.9748	3.5996	4.0758	
80	2.0165	2.4859	2.9504	3.5631	4.0285	
100	2.0019	2.4626	2.9166	3.5127	3.9634	
120	1.9923	2.4472	2.8943	3.4795	3.9207	
150	1.9827	2.4320	2.8722	3.4467	3.8785	
200	1.9732	2.4168	2.8503	3.4143	3.8368	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
4	500	1.9561	2.3898	2.8114	3.3569	3.7632
	$+\infty$	1.9449	2.3719	2.7858	3.3192	3.7151
5	1	57.240	230.16	921.85	5763.6	23056
	2	9.2926	19.296	39.298	99.299	199.30
	3	5.3092	9.0135	14.885	28.237	45.392
	4	4.0506	6.2561	9.3645	15.522	22.456
	5	3.4530	5.0503	7.1464	10.967	14.940
	6	3.1075	4.3874	5.9876	8.7459	11.464
	7	2.8833	3.9715	5.2852	7.4604	9.5221
	8	2.7264	3.6875	4.8173	6.6318	8.3018
	9	2.6106	3.4817	4.4844	6.0569	7.4712
	10	2.5216	3.3258	4.2361	5.6363	6.8724
	11	2.4512	3.2039	4.0440	5.3160	6.4217
	12	2.3940	3.1059	3.8911	5.0643	6.0711
	13	2.3467	3.0254	3.7667	4.8616	5.7910
	14	2.3069	2.9582	3.6634	4.6950	5.5623
	15	2.2730	2.9013	3.5764	4.5556	5.3721
	16	2.2438	2.8524	3.5021	4.4374	5.2117
	17	2.2183	2.8100	3.4379	4.3359	5.0746
	18	2.1958	2.7729	3.3820	4.2479	4.9560
	19	2.1760	2.7401	3.3327	4.1708	4.8526
	20	2.1582	2.7109	3.2891	4.1027	4.7616
	21	2.1423	2.6848	3.2501	4.0421	4.6809
22	2.1279	2.6613	3.2151	3.9880	4.6088	
23	2.1149	2.6400	3.1835	3.9392	4.5441	
24	2.1030	2.6207	3.1548	3.8951	4.4857	
25	2.0922	2.6030	3.1287	3.8550	4.4327	
30	2.0492	2.5336	3.0265	3.6990	4.2276	
35	2.0191	2.4851	2.9557	3.5919	4.0876	
40	1.9968	2.4495	2.9037	3.5138	3.9860	
45	1.9796	2.4221	2.8640	3.4544	3.9090	
50	1.9660	2.4004	2.8327	3.4077	3.8486	
60	1.9457	2.3683	2.7863	3.3389	3.7599	
70	1.9313	2.3456	2.7537	3.2907	3.6980	
80	1.9206	2.3287	2.7295	3.2550	3.6524	
100	1.9057	2.3053	2.6961	3.2059	3.5895	
120	1.8959	2.2899	2.6740	3.1735	3.5482	
150	1.8861	2.2745	2.6521	3.1416	3.5075	
200	1.8763	2.2592	2.6304	3.1100	3.4674	
500	1.8588	2.2320	2.5919	3.0540	3.3963	
$+\infty$	1.8473	2.2141	2.5665	3.0173	3.3499	
6	1	58.204	233.99	937.11	5859.0	23437
	2	9.3255	19.330	39.331	99.333	199.33
	3	5.2847	8.9406	14.735	27.911	44.838
	4	4.0097	6.1631	9.1973	15.207	21.975
	5	3.4045	4.9503	6.9777	10.672	14.513
	6	3.0546	4.2839	5.8198	8.4661	11.073
	7	2.8274	3.8660	5.1186	7.1914	9.1553
	8	2.6683	3.5806	4.6517	6.3707	7.9520
	9	2.5509	3.3738	4.3197	5.8018	7.1339
	10	2.4606	3.2172	4.0721	5.3858	6.5446
	11	2.3891	3.0946	3.8807	5.0692	6.1016
	12	2.3310	2.9961	3.7283	4.8206	5.7570
	13	2.2830	2.9153	3.6043	4.6204	5.4819
	14	2.2426	2.8477	3.5014	4.4558	5.2574
	15	2.2081	2.7905	3.4147	4.3183	5.0708
	16	2.1783	2.7413	3.3406	4.2016	4.9134
	17	2.1524	2.6987	3.2767	4.1015	4.7789
	18	2.1296	2.6613	3.2209	4.0146	4.6627
	19	2.1094	2.6283	3.1718	3.9386	4.5614
	20	2.0913	2.5990	3.1283	3.8714	4.4721
	21	2.0751	2.5727	3.0895	3.8117	4.3931

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	
6	22	2.0605	2.5491	3.0546	3.7583	4.3225	8	6	2.9830	4.1468	5.5996	8.1017	10.566	
	23	2.0472	2.5277	3.0232	3.7102	4.2591		7	2.7516	3.7257	4.8993	6.8400	8.6781	
	24	2.0351	2.5082	2.9946	3.6667	4.2019		8	2.5893	3.4381	4.4333	6.0289	7.4959	
	25	2.0241	2.4904	2.9685	3.6272	4.1500		9	2.4694	3.2296	4.1020	5.4671	6.6933	
	30	1.9803	2.4205	2.8667	3.4735	3.9492		10	2.3772	3.0717	3.8549	5.0567	6.1159	
	35	1.9496	2.3718	2.7961	3.3679	3.8123		11	2.3040	2.9480	3.6638	4.7445	5.6821	
	40	1.9269	2.3359	2.7444	3.2910	3.7129		12	2.2446	2.8486	3.5118	4.4994	5.3451	
	45	1.9094	2.3083	2.7048	3.2325	3.6376		13	2.1953	2.7669	3.3880	4.3021	5.0761	
	50	1.8954	2.2864	2.6736	3.1864	3.5785		14	2.1539	2.6987	3.2853	4.1399	4.8566	
	60	1.8747	2.2541	2.6274	3.1187	3.4918		15	2.1185	2.6408	3.1987	4.0045	4.6744	
	70	1.8600	2.2312	2.5949	3.0712	3.4313		16	2.0880	2.5911	3.1248	3.8896	4.5207	
	80	1.8491	2.2142	2.5708	3.0361	3.3867		17	2.0613	2.5480	3.0610	3.7910	4.3894	
	100	1.8339	2.1906	2.5374	2.9877	3.3252		18	2.0379	2.5102	3.0053	3.7054	4.2759	
	120	1.8238	2.1750	2.5154	2.9559	3.2849		19	2.0171	2.4768	2.9563	3.6305	4.1770	
	150	1.8138	2.1595	2.4936	2.9244	3.2452		20	1.9985	2.4471	2.9128	3.5644	4.0900	
	200	1.8038	2.1441	2.4720	2.8933	3.2059		21	1.9819	2.4205	2.8740	3.5056	4.0128	
	500	1.7859	2.1167	2.4335	2.8381	3.1366		22	1.9668	2.3965	2.8392	3.4530	3.9440	
	$+\infty$	1.7741	2.0986	2.4082	2.8020	3.0913		23	1.9531	2.3748	2.8077	3.4057	3.8822	
	7	1	58.906	236.77	948.22	5928.4		23715	24	1.9407	2.3551	2.7791	3.3629	3.8264
		2	9.3491	19.353	39.355	99.356		199.36	25	1.9292	2.3371	2.7531	3.3239	3.7758
3		5.2662	8.8867	14.624	27.672	44.434	30	1.8841	2.2662	2.6513	3.1726	3.5801		
4		3.9790	6.0942	9.0741	14.976	21.622	35	1.8524	2.2167	2.5807	3.0687	3.4466		
5		3.3679	4.8759	6.8531	10.456	14.200	40	1.8289	2.1802	2.5289	2.9930	3.3498		
6		3.0145	4.2067	5.6955	8.2600	10.786	45	1.8107	2.1521	2.4892	2.9353	3.2764		
7		2.7849	3.7870	4.9949	6.9928	8.8854	50	1.7963	2.1299	2.4579	2.8900	3.2189		
8		2.6241	3.5005	4.5286	6.1776	7.6941	60	1.7748	2.0970	2.4117	2.8233	3.1344		
9		2.5053	3.2927	4.1970	5.6129	6.8849	70	1.7596	2.0737	2.3791	2.7765	3.0755		
10		2.4140	3.1355	3.9498	5.2001	6.3025	80	1.7483	2.0564	2.3549	2.7420	3.0320		
11		2.3416	3.0123	3.7586	4.8861	5.8648	100	1.7324	2.0323	2.3215	2.6943	2.9722		
12		2.2828	2.9134	3.6065	4.6395	5.5245	120	1.7220	2.0164	2.2994	2.6629	2.9330		
13		2.2341	2.8321	3.4827	4.4410	5.2529	150	1.7115	2.0006	2.2775	2.6319	2.8942		
14		2.1931	2.7642	3.3799	4.2779	5.0313	200	1.7011	1.9849	2.2558	2.6012	2.8560		
15		2.1582	2.7066	3.2934	4.1415	4.8473	500	1.6825	1.9569	2.2172	2.5469	2.7885		
16		2.1280	2.6572	3.2194	4.0259	4.6920	$+\infty$	1.6702	1.9384	2.1918	2.5113	2.7444		
17		2.1017	2.6143	3.1556	3.9267	4.5594	9	1	59.858	240.54	963.28	6022.5	24091	
18		2.0785	2.5767	3.0999	3.8406	4.4448		2	9.3805	19.385	39.387	99.388	199.39	
19		2.0580	2.5435	3.0509	3.7653	4.3448		3	5.2400	8.8123	14.473	27.345	43.882	
20		2.0397	2.5140	3.0074	3.6987	4.2569		4	3.9357	5.9988	8.9047	14.659	21.139	
21		2.0233	2.4876	2.9686	3.6396	4.1789		5	3.3163	4.7725	6.6811	10.158	13.772	
22		2.0084	2.4638	2.9338	3.5867	4.1094		6	2.9577	4.0990	5.5234	7.9761	10.391	
23		1.9949	2.4422	2.9023	3.5390	4.0469		7	2.7247	3.6767	4.8232	6.7188	8.5138	
24		1.9826	2.4226	2.8738	3.4959	3.9905		8	2.5612	3.3881	4.3572	5.9106	7.3386	
25		1.9714	2.4047	2.8478	3.4568	3.9394		9	2.4403	3.1789	4.0260	5.3511	6.5411	
30		1.9269	2.3343	2.7460	3.3045	3.7416		10	2.3473	3.0204	3.7790	4.9424	5.9676	
35		1.8957	2.2852	2.6755	3.2000	3.6066		11	2.2735	2.8962	3.5879	4.6315	5.5368	
40		1.8725	2.2490	2.6238	3.1238	3.5088		12	2.2135	2.7964	3.4358	4.3875	5.2021	
45		1.8547	2.2212	2.5842	3.0658	3.4346		13	2.1638	2.7144	3.3120	4.1911	4.9351	
50		1.8405	2.1992	2.5530	3.0202	3.3765		14	2.1220	2.6458	3.2093	4.0297	4.7173	
60	1.8194	2.1665	2.5068	2.9530	3.2911	15		2.0862	2.5876	3.1227	3.8948	4.5364		
70	1.8044	2.1435	2.4743	2.9060	3.2315	16		2.0553	2.5377	3.0488	3.7804	4.3838		
80	1.7933	2.1263	2.4502	2.8713	3.1876	17		2.0284	2.4943	2.9849	3.6822	4.2535		
100	1.7778	2.1025	2.4168	2.8233	3.1271	18		2.0047	2.4563	2.9291	3.5971	4.1410		
120	1.7675	2.0868	2.3948	2.7918	3.0874	19		1.9836	2.4227	2.8801	3.5225	4.0428		
150	1.7572	2.0711	2.3730	2.7606	3.0483	20		1.9649	2.3928	2.8365	3.4567	3.9564		
200	1.7470	2.0556	2.3513	2.7298	3.0097	21		1.9480	2.3660	2.7977	3.3981	3.8799		
500	1.7288	2.0279	2.3129	2.6751	2.9414	22		1.9327	2.3419	2.7628	3.3458	3.8116		
$+\infty$	1.7167	2.0096	2.2875	2.6393	2.8968	23		1.9189	2.3201	2.7313	3.2986	3.7502		
8	1	59.439	238.88	956.66	5981.1	23925		24	1.9063	2.3002	2.7027	3.2560	3.6949	
	2	9.3668	19.371	39.373	99.374	199.37		25	1.8947	2.2821	2.6766	3.2172	3.6447	
	3	5.2517	8.8452	14.540	27.489	44.126		30	1.8490	2.2107	2.5746	3.0665	3.4505	
	4	3.9549	6.0410	8.9796	14.799	21.352		35	1.8168	2.1608	2.5039	2.9630	3.3180	
	5	3.3393	4.8183	6.7572	10.289	13.961		40	1.7929	2.1240	2.4519	2.8876	3.2220	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
9	45	1.7745	2.0958	2.4122	2.8301	3.1492	11	13	2.1155	2.6347	3.1975	4.0245	4.7240
	50	1.7598	2.0734	2.3808	2.7850	3.0920		14	2.0729	2.5655	3.0946	3.8640	4.5085
	60	1.7380	2.0401	2.3344	2.7185	3.0083		15	2.0366	2.5068	3.0078	3.7299	4.3295
	70	1.7225	2.0166	2.3017	2.6719	2.9498		16	2.0051	2.4564	2.9337	3.6162	4.1785
	80	1.7110	1.9991	2.2775	2.6374	2.9066		17	1.9777	2.4126	2.8696	3.5185	4.0496
	100	1.6949	1.9748	2.2439	2.5898	2.8472		18	1.9535	2.3742	2.8137	3.4338	3.9382
	120	1.6842	1.9588	2.2217	2.5586	2.8083		19	1.9321	2.3402	2.7645	3.3596	3.8410
	150	1.6736	1.9428	2.1998	2.5277	2.7698		20	1.9129	2.3100	2.7209	3.2941	3.7555
	200	1.6630	1.9269	2.1780	2.4971	2.7319		21	1.8956	2.2829	2.6819	3.2359	3.6798
	500	1.6441	1.8986	2.1392	2.4429	2.6649		22	1.8801	2.2585	2.6469	3.1837	3.6122
	$+\infty$	1.6315	1.8799	2.1136	2.4073	2.6210		23	1.8659	2.2364	2.6152	3.1368	3.5515
10	1	60.195	241.88	968.63	6055.8	24224	24	1.8530	2.2163	2.5865	3.0944	3.4967	
	2	9.3916	19.396	39.398	99.399	199.40	25	1.8412	2.1979	2.5603	3.0558	3.4470	
	3	5.2304	8.7855	14.419	27.229	43.686	30	1.7944	2.1256	2.4577	2.9057	3.2547	
	4	3.9199	5.9644	8.8439	14.546	20.967	35	1.7614	2.0750	2.3866	2.8026	3.1236	
	5	3.2974	4.7351	6.6192	10.051	13.618	40	1.7369	2.0376	2.3343	2.7274	3.0284	
	6	2.9369	4.0600	5.4613	7.8741	10.250	45	1.7180	2.0088	2.2943	2.6701	2.9563	
	7	2.7025	3.6365	4.7611	6.6201	8.3803	50	1.7029	1.9861	2.2627	2.6250	2.8997	
	8	2.5380	3.3472	4.2951	5.8143	7.2106	60	1.6805	1.9522	2.2159	2.5587	2.8166	
	9	2.4163	3.1373	3.9639	5.2565	6.4172	70	1.6645	1.9283	2.1829	2.5122	2.7587	
	10	2.3226	2.9782	3.7168	4.8491	5.8467	80	1.6526	1.9105	2.1584	2.4777	2.7159	
	11	2.2482	2.8536	3.5257	4.5393	5.4183	100	1.6360	1.8857	2.1245	2.4302	2.6570	
	12	2.1878	2.7534	3.3736	4.2961	5.0855	120	1.6250	1.8693	2.1021	2.3990	2.6183	
	13	2.1376	2.6710	3.2497	4.1003	4.8199	150	1.6140	1.8530	2.0799	2.3681	2.5802	
	14	2.0954	2.6022	3.1469	3.9394	4.6034	200	1.6031	1.8368	2.0578	2.3375	2.5425	
	15	2.0593	2.5437	3.0602	3.8049	4.4235	500	1.5835	1.8078	2.0186	2.2833	2.4760	
	16	2.0281	2.4935	2.9862	3.6909	4.2719	$+\infty$	1.5705	1.7886	1.9927	2.2477	2.4324	
	17	2.0009	2.4499	2.9222	3.5931	4.1424	12	1	60.705	243.91	976.71	6106.3	24426
	18	1.9770	2.4117	2.8664	3.5082	4.0305		2	9.4081	19.413	39.415	99.416	199.42
	19	1.9557	2.3779	2.8172	3.4338	3.9329		3	5.2156	8.7446	14.337	27.052	43.387
	20	1.9367	2.3479	2.7737	3.3682	3.8470		4	3.8955	5.9117	8.7512	14.374	20.705
	21	1.9197	2.3210	2.7348	3.3098	3.7709		5	3.2682	4.6777	6.5245	9.8883	13.384
	22	1.9043	2.2967	2.6998	3.2576	3.7030		6	2.9047	3.9999	5.3662	7.7183	10.034
	23	1.8903	2.2747	2.6682	3.2106	3.6420		7	2.6681	3.5747	4.6658	6.4691	8.1764
	24	1.8775	2.2547	2.6396	3.1681	3.5870		8	2.5020	3.2839	4.1997	5.6667	7.0149
	25	1.8658	2.2365	2.6135	3.1294	3.5370		9	2.3789	3.0729	3.8682	5.1114	6.2274
	30	1.8195	2.1646	2.5112	2.9791	3.3440		10	2.2841	2.9130	3.6209	4.7059	5.6613
	35	1.7869	2.1143	2.4403	2.8758	3.2123		11	2.2087	2.7876	3.4296	4.3974	5.2363
	40	1.7627	2.0772	2.3882	2.8005	3.1167		12	2.1474	2.6866	3.2773	4.1553	4.9062
	45	1.7440	2.0487	2.3483	2.7432	3.0443		13	2.0966	2.6037	3.1532	3.9603	4.6429
	50	1.7291	2.0261	2.3168	2.6981	2.9875		14	2.0537	2.5342	3.0502	3.8001	4.4281
	60	1.7070	1.9926	2.2702	2.6318	2.9042		15	2.0171	2.4753	2.9633	3.6662	4.2497
	70	1.6913	1.9689	2.2374	2.5852	2.8460		16	1.9854	2.4247	2.8890	3.5527	4.0994
	80	1.6796	1.9512	2.2130	2.5508	2.8031		17	1.9577	2.3807	2.8249	3.4552	3.9709
	100	1.6632	1.9267	2.1793	2.5033	2.7440		18	1.9333	2.3421	2.7689	3.3706	3.8599
120	1.6524	1.9105	2.1570	2.4721	2.7052	19		1.9117	2.3080	2.7196	3.2965	3.7631	
150	1.6416	1.8943	2.1349	2.4412	2.6669	20		1.8924	2.2776	2.6758	3.2311	3.6779	
200	1.6308	1.8783	2.1130	2.4106	2.6292	21		1.8750	2.2504	2.6368	3.1730	3.6024	
500	1.6115	1.8496	2.0740	2.3565	2.5625	22		1.8593	2.2258	2.6017	3.1209	3.5350	
$+\infty$	1.5987	1.8307	2.0483	2.3209	2.5188	23		1.8450	2.2036	2.5699	3.0740	3.4745	
11	1	60.473	242.98	973.03	6083.3	24334		24	1.8319	2.1834	2.5411	3.0316	3.4199
	2	9.4006	19.405	39.407	99.408	199.41		25	1.8200	2.1649	2.5149	2.9931	3.3704
	3	5.2224	8.7633	14.374	27.133	43.524		30	1.7727	2.0921	2.4120	2.8431	3.1787
	4	3.9067	5.9358	8.7935	14.452	20.824		35	1.7394	2.0411	2.3406	2.7400	3.0480
	5	3.2816	4.7040	6.5678	9.9626	13.491		40	1.7146	2.0035	2.2882	2.6648	2.9531
	6	2.9195	4.0274	5.4098	7.7896	10.133		45	1.6954	1.9745	2.2480	2.6076	2.8811
	7	2.6839	3.6030	4.7095	6.5382	8.2697		50	1.6802	1.9515	2.2162	2.5625	2.8247
	8	2.5186	3.3130	4.2434	5.7343	7.1045		60	1.6574	1.9174	2.1692	2.4961	2.7419
	9	2.3961	3.1025	3.9121	5.1779	6.3142		70	1.6413	1.8932	2.1361	2.4496	2.6840
	10	2.3018	2.9430	3.6649	4.7715	5.7462		80	1.6292	1.8753	2.1115	2.4151	2.6413
	11	2.2269	2.8179	3.4737	4.4624	5.3197		100	1.6124	1.8503	2.0773	2.3676	2.5825
	12	2.1660	2.7173	3.3215	4.2198	4.9884	120	1.6012	1.8337	2.0548	2.3363	2.5439	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
12	150	1.5901	1.8172	2.0325	2.3053	2.5059	14	20	1.8588	2.2250	2.6030	3.1296	3.5530
	200	1.5789	1.8008	2.0103	2.2747	2.4683		21	1.8412	2.1975	2.5638	3.0715	3.4779
	500	1.5590	1.7715	1.9708	2.2204	2.4018		22	1.8252	2.1727	2.5285	3.0195	3.4108
	$+\infty$	1.5458	1.7522	1.9447	2.1847	2.3583		23	1.8107	2.1502	2.4966	2.9727	3.3506
13	1	60.903	244.69	979.84	6125.9	24505	24	1.7974	2.1298	2.4677	2.9303	3.2962	
	2	9.4145	19.419	39.421	99.422	199.42	25	1.7853	2.1111	2.4413	2.8917	3.2469	
	3	5.2098	8.7287	14.304	26.983	43.271	30	1.7371	2.0374	2.3378	2.7418	3.0560	
	4	3.8859	5.8911	8.7150	14.307	20.603	35	1.7031	1.9858	2.2659	2.6387	2.9258	
	5	3.2567	4.6552	6.4876	9.8248	13.293	40	1.6778	1.9476	2.2130	2.5634	2.8312	
	6	2.8920	3.9764	5.3290	7.6575	9.9501	45	1.6582	1.9182	2.1725	2.5060	2.7595	
	7	2.6545	3.5503	4.6285	6.4100	8.0967	50	1.6426	1.8949	2.1404	2.4609	2.7032	
	8	2.4876	3.2590	4.1622	5.6089	6.9384	60	1.6193	1.8602	2.0929	2.3943	2.6205	
	9	2.3640	3.0475	3.8306	5.0545	6.1530	70	1.6028	1.8357	2.0595	2.3477	2.5627	
	10	2.2687	2.8872	3.5832	4.6496	5.5887	80	1.5904	1.8174	2.0346	2.3131	2.5201	
	11	2.1930	2.7614	3.3917	4.3416	5.1649	100	1.5731	1.7919	2.0001	2.2654	2.4614	
	12	2.1313	2.6602	3.2393	4.0999	4.8358	120	1.5617	1.7750	1.9773	2.2339	2.4228	
	13	2.0802	2.5769	3.1150	3.9052	4.5733	150	1.5502	1.7582	1.9546	2.2028	2.3847	
	14	2.0370	2.5073	3.0119	3.7452	4.3591	200	1.5388	1.7415	1.9322	2.1721	2.3472	
	15	2.0001	2.4481	2.9249	3.6115	4.1813	500	1.5182	1.7116	1.8921	2.1174	2.2806	
	16	1.9682	2.3973	2.8506	3.4981	4.0314	$+\infty$	1.5046	1.6918	1.8656	2.0815	2.2371	
	17	1.9404	2.3531	2.7863	3.4007	3.9033	15	1	61.220	245.95	984.87	6157.3	24630
	18	1.9158	2.3143	2.7302	3.3162	3.7926		2	9.4247	19.429	39.431	99.433	199.43
	19	1.8940	2.2800	2.6808	3.2422	3.6961		3	5.2003	8.7029	14.253	26.872	43.085
	20	1.8745	2.2495	2.6369	3.1769	3.6111		4	3.8704	5.8578	8.6565	14.198	20.438
	21	1.8570	2.2222	2.5978	3.1187	3.5358		5	3.2380	4.6188	6.4277	9.7222	13.146
	22	1.8411	2.1975	2.5626	3.0667	3.4686		6	2.8712	3.9381	5.2687	7.5590	9.8140
	23	1.8267	2.1752	2.5308	3.0199	3.4083		7	2.6322	3.5107	4.5678	6.3143	7.9678
	24	1.8136	2.1548	2.5019	2.9775	3.3538		8	2.4642	3.2184	4.1012	5.5151	6.8143
	25	1.8015	2.1362	2.4756	2.9389	3.3044		9	2.3396	3.0061	3.7694	4.9621	6.0325
	30	1.7538	2.0630	2.3724	2.7890	3.1132		10	2.2435	2.8450	3.5217	4.5581	5.4707
	35	1.7201	2.0117	2.3008	2.6859	2.9827		11	2.1671	2.7186	3.3299	4.2509	5.0489
	40	1.6950	1.9738	2.2481	2.6107	2.8880		12	2.1049	2.6169	3.1772	4.0096	4.7213
	45	1.6757	1.9446	2.2078	2.5534	2.8162		13	2.0532	2.5331	3.0527	3.8154	4.4600
	50	1.6602	1.9214	2.1758	2.5083	2.7599		14	2.0095	2.4630	2.9493	3.6557	4.2468
	60	1.6372	1.8870	2.1286	2.4419	2.6771		15	1.9722	2.4034	2.8621	3.5222	4.0698
	70	1.6209	1.8627	2.0953	2.3953	2.6193		16	1.9399	2.3522	2.7875	3.4089	3.9205
	80	1.6086	1.8445	2.0706	2.3608	2.5767		17	1.9117	2.3077	2.7230	3.3117	3.7929
	100	1.5916	1.8193	2.0363	2.3132	2.5180		18	1.8868	2.2686	2.6667	3.2273	3.6827
	120	1.5803	1.8026	2.0136	2.2818	2.4794		19	1.8647	2.2341	2.6171	3.1533	3.5866
150	1.5690	1.7859	1.9911	2.2508	2.4413	20		1.8449	2.2033	2.5731	3.0880	3.5020	
200	1.5577	1.7694	1.9688	2.2201	2.4038	21		1.8271	2.1757	2.5338	3.0300	3.4270	
500	1.5374	1.7398	1.9290	2.1656	2.3373	22		1.8111	2.1508	2.4984	2.9779	3.3600	
$+\infty$	1.5240	1.7202	1.9027	2.1299	2.2938	23		1.7964	2.1282	2.4665	2.9311	3.2999	
14	1	61.073	245.36	982.53	6142.7	24572		24	1.7831	2.1077	2.4374	2.8887	3.2456
	2	9.4200	19.424	39.427	99.428	199.43		25	1.7708	2.0889	2.4110	2.8502	3.1963
	3	5.2047	8.7149	14.277	26.924	43.172		30	1.7223	2.0148	2.3072	2.7002	3.0057
	4	3.8776	5.8733	8.6838	14.249	20.515		35	1.6880	1.9629	2.2350	2.5970	2.8756
	5	3.2468	4.6358	6.4556	9.7700	13.215		40	1.6624	1.9245	2.1819	2.5216	2.7811
	6	2.8809	3.9559	5.2968	7.6049	9.8774		45	1.6426	1.8949	2.1412	2.4642	2.7094
	7	2.6426	3.5292	4.5961	6.3590	8.0279		50	1.6269	1.8714	2.1090	2.4190	2.6531
	8	2.4752	3.2374	4.1297	5.5589	6.8721		60	1.6034	1.8364	2.0613	2.3523	2.5705
	9	2.3510	3.0255	3.7980	5.0052	6.0887		70	1.5866	1.8117	2.0277	2.3055	2.5127
	10	2.2553	2.8647	3.5504	4.6008	5.5257		80	1.5741	1.7932	2.0026	2.2709	2.4700
	11	2.1792	2.7386	3.3588	4.2932	5.1031		100	1.5566	1.7675	1.9679	2.2230	2.4113
	12	2.1173	2.6371	3.2062	4.0518	4.7748		120	1.5450	1.7505	1.9450	2.1915	2.3727
	13	2.0658	2.5536	3.0819	3.8573	4.5129	150	1.5334	1.7335	1.9222	2.1603	2.3346	
	14	2.0224	2.4837	2.9786	3.6975	4.2993	200	1.5218	1.7166	1.8996	2.1294	2.2970	
	15	1.9853	2.4244	2.8915	3.5639	4.1219	500	1.5010	1.6864	1.8592	2.0746	2.2304	
	16	1.9532	2.3733	2.8170	3.4506	3.9723	$+\infty$	1.4871	1.6664	1.8326	2.0385	2.1868	
	17	1.9252	2.3290	2.7526	3.3533	3.8445	16	1	61.350	246.46	986.92	6170.1	24681
	18	1.9004	2.2900	2.6964	3.2689	3.7341		2	9.4289	19.433	39.435	99.437	199.44
	19	1.8785	2.2556	2.6469	3.1949	3.6378		3	5.1964	8.6923	14.232	26.827	43.008

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
16	4	3.8639	5.8441	8.6326	14.154	20.371
	5	3.2303	4.6038	6.4032	9.6802	13.086
	6	2.8626	3.9223	5.2439	7.5186	9.7582
	7	2.6230	3.4944	4.5428	6.2750	7.9148
	8	2.4545	3.2016	4.0761	5.4766	6.7633
	9	2.3295	2.9890	3.7441	4.9240	5.9829
	10	2.2330	2.8276	3.4963	4.5204	5.4221
	11	2.1563	2.7009	3.3044	4.2134	5.0011
	12	2.0938	2.5989	3.1515	3.9724	4.6741
	13	2.0419	2.5149	3.0269	3.7783	4.4132
	14	1.9981	2.4446	2.9234	3.6187	4.2005
	15	1.9605	2.3849	2.8360	3.4852	4.0237
	16	1.9281	2.3335	2.7614	3.3720	3.8747
	17	1.8997	2.2888	2.6968	3.2748	3.7473
	18	1.8747	2.2496	2.6404	3.1904	3.6373
	19	1.8524	2.2149	2.5907	3.1165	3.5412
	20	1.8325	2.1840	2.5465	3.0512	3.4568
	21	1.8146	2.1563	2.5071	2.9931	3.3818
	22	1.7984	2.1313	2.4717	2.9411	3.3150
	23	1.7837	2.1086	2.4396	2.8943	3.2549
	24	1.7703	2.0880	2.4105	2.8519	3.2007
	25	1.7579	2.0691	2.3840	2.8133	3.1515
	30	1.7090	1.9946	2.2799	2.6632	2.9611
	35	1.6744	1.9424	2.2075	2.5599	2.8310
	40	1.6486	1.9037	2.1542	2.4844	2.7365
	45	1.6287	1.8740	2.1133	2.4269	2.6648
	50	1.6128	1.8503	2.0810	2.3816	2.6086
	60	1.5890	1.8151	2.0330	2.3148	2.5259
	70	1.5721	1.7902	1.9992	2.2679	2.4681
	80	1.5594	1.7716	1.9741	2.2332	2.4254
100	1.5418	1.7456	1.9391	2.1852	2.3666	
120	1.5300	1.7285	1.9161	2.1536	2.3280	
150	1.5182	1.7113	1.8931	2.1223	2.2898	
200	1.5065	1.6943	1.8704	2.0913	2.2521	
500	1.4854	1.6638	1.8297	2.0362	2.1854	
$+\infty$	1.4714	1.6435	1.8028	2.0000	2.1417	
17	1	61.464	246.92	988.73	6181.4	24727
	2	9.4325	19.437	39.439	99.440	199.44
	3	5.1929	8.6829	14.213	26.787	42.941
	4	3.8582	5.8320	8.6113	14.115	20.311
	5	3.2234	4.5904	6.3814	9.6429	13.033
	6	2.8550	3.9083	5.2218	7.4827	9.7086
	7	2.6148	3.4799	4.5206	6.2401	7.8678
	8	2.4458	3.1867	4.0538	5.4423	6.7180
	9	2.3205	2.9737	3.7216	4.8902	5.9388
	10	2.2237	2.8120	3.4737	4.4869	5.3789
	11	2.1467	2.6851	3.2816	4.1801	4.9586
	12	2.0839	2.5828	3.1286	3.9392	4.6321
	13	2.0318	2.4987	3.0039	3.7452	4.3716
	14	1.9878	2.4282	2.9003	3.5857	4.1592
	15	1.9501	2.3683	2.8128	3.4523	3.9827
	16	1.9175	2.3167	2.7380	3.3391	3.8338
	17	1.8889	2.2719	2.6733	3.2419	3.7066
	18	1.8638	2.2325	2.6168	3.1575	3.5967
	19	1.8414	2.1977	2.5670	3.0836	3.5008
	20	1.8214	2.1667	2.5228	3.0183	3.4164
	21	1.8034	2.1389	2.4833	2.9602	3.3416
	22	1.7871	2.1138	2.4478	2.9082	3.2748
	23	1.7723	2.0910	2.4157	2.8613	3.2148
	24	1.7587	2.0703	2.3865	2.8189	3.1606
	25	1.7463	2.0513	2.3599	2.7803	3.1114
	30	1.6970	1.9765	2.2554	2.6301	2.9211

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	
17	35	1.6622	1.9240	2.1828	2.5266	2.7911	
	40	1.6362	1.8851	2.1293	2.4511	2.6966	
	45	1.6161	1.8551	2.0883	2.3935	2.6249	
	50	1.6000	1.8313	2.0558	2.3481	2.5686	
	60	1.5760	1.7959	2.0076	2.2811	2.4859	
	70	1.5589	1.7708	1.9736	2.2341	2.4281	
	80	1.5461	1.7520	1.9483	2.1993	2.3854	
	100	1.5283	1.7259	1.9132	2.1511	2.3265	
	120	1.5164	1.7085	1.8900	2.1194	2.2878	
	150	1.5045	1.6913	1.8669	2.0880	2.2496	
	200	1.4926	1.6741	1.8440	2.0569	2.2118	
	500	1.4712	1.6432	1.8030	2.0016	2.1449	
	$+\infty$	1.4570	1.6228	1.7759	1.9652	2.1011	
	18	1	61.566	247.32	990.35	6191.5	24767
		2	9.4358	19.440	39.442	99.444	199.44
3		5.1898	8.6745	14.196	26.751	42.880	
4		3.8531	5.8211	8.5924	14.080	20.258	
5		3.2172	4.5785	6.3619	9.6096	12.985	
6		2.8481	3.8957	5.2021	7.4507	9.6644	
7		2.6074	3.4669	4.5008	6.2089	7.8258	
8		2.4380	3.1733	4.0338	5.4116	6.6775	
9		2.3123	2.9600	3.7015	4.8599	5.8994	
10		2.2153	2.7980	3.4534	4.4569	5.3403	
11		2.1380	2.6709	3.2612	4.1503	4.9205	
12		2.0750	2.5684	3.1081	3.9095	4.5945	
13		2.0227	2.4841	2.9832	3.7156	4.3344	
14		1.9785	2.4134	2.8795	3.5561	4.1221	
15		1.9407	2.3533	2.7919	3.4228	3.9459	
16		1.9079	2.3016	2.7170	3.3096	3.7972	
17		1.8792	2.2567	2.6522	3.2124	3.6701	
18		1.8539	2.2172	2.5956	3.1280	3.5603	
19		1.8314	2.1823	2.5457	3.0541	3.4645	
20		1.8113	2.1511	2.5014	2.9887	3.3802	
21	1.7932	2.1232	2.4618	2.9306	3.3054		
22	1.7768	2.0980	2.4262	2.8786	3.2387		
23	1.7619	2.0751	2.3940	2.8317	3.1787		
24	1.7483	2.0543	2.3648	2.7892	3.1246		
25	1.7358	2.0353	2.3381	2.7506	3.0754		
30	1.6862	1.9601	2.2334	2.6003	2.8852		
35	1.6511	1.9073	2.1605	2.4967	2.7551		
40	1.6249	1.8682	2.1068	2.4210	2.6607		
45	1.6046	1.8381	2.0656	2.3633	2.5889		
50	1.5884	1.8141	2.0330	2.3178	2.5326		
60	1.5642	1.7784	1.9846	2.2507	2.4498		
70	1.5470	1.7531	1.9504	2.2036	2.3919		
80	1.5340	1.7342	1.9250	2.1686	2.3492		
100	1.5160	1.7079	1.8897	2.1203	2.2902		
120	1.5039	1.6904	1.8663	2.0885	2.2514		
150	1.4919	1.6730	1.8431	2.0570	2.2131		
200	1.4799	1.6556	1.8200	2.0257	2.1753		
500	1.4583	1.6245	1.7787	1.9702	2.1082		
$+\infty$	1.4439	1.6038	1.7515	1.9336	2.0642		
19	1	61.658	247.69	991.80	6200.6	24803	
	2	9.4387	19.443	39.445	99.447	199.45	
	3	5.1870	8.6670	14.181	26.719	42.826	
	4	3.8485	5.8114	8.5753	14.048	20.210	
	5	3.2117	4.5678	6.3444	9.5797	12.942	
	6	2.8419	3.8844	5.1844	7.4219	9.6247	
	7	2.6008	3.4551	4.4829	6.1808	7.7881	
	8	2.4310	3.1613	4.0158	5.3840	6.6411	
	9	2.3050	2.9477	3.6833	4.8327	5.8639	
	10	2.2077	2.7854	3.4351	4.4299	5.3055	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	
19	11	2.1302	2.6581	3.2428	4.1234	4.8863	20	100	1.4943	1.6764	1.8486	2.0666	2.2270	
	12	2.0670	2.5554	3.0896	3.8827	4.5606		120	1.4821	1.6587	1.8249	2.0346	2.1881	
	13	2.0145	2.4709	2.9646	3.6888	4.3008		150	1.4698	1.6410	1.8014	2.0028	2.1496	
	14	1.9701	2.4000	2.8607	3.5294	4.0888		200	1.4575	1.6233	1.7780	1.9713	2.1116	
	15	1.9321	2.3398	2.7730	3.3961	3.9127		500	1.4354	1.5916	1.7362	1.9152	2.0441	
	16	1.8992	2.2880	2.6980	3.2829	3.7641		$+\infty$	1.4206	1.5705	1.7085	1.8783	1.9998	
	17	1.8704	2.2429	2.6331	3.1857	3.6372		21	1	61.815	248.31	994.29	6216.1	24866
	18	1.8450	2.2033	2.5764	3.1013	3.5275			2	9.4437	19.448	39.450	99.452	199.45
	19	1.8224	2.1683	2.5265	3.0274	3.4318			3	5.1822	8.6540	14.155	26.664	42.733
	20	1.8022	2.1370	2.4821	2.9620	3.3475			4	3.8405	5.7945	8.5460	13.994	20.128
	21	1.7840	2.1090	2.4424	2.9039	3.2728	5		3.2021	4.5493	6.3142	9.5281	12.868	
	22	1.7675	2.0837	2.4067	2.8518	3.2060	6		2.8312	3.8649	5.1538	7.3722	9.5562	
	23	1.7525	2.0608	2.3745	2.8049	3.1461	7		2.5892	3.4349	4.4520	6.1324	7.7230	
	24	1.7388	2.0399	2.3452	2.7624	3.0920	8		2.4188	3.1404	3.9846	5.3364	6.5783	
	25	1.7263	2.0207	2.3184	2.7238	3.0429	9		2.2922	2.9263	3.6520	4.7856	5.8027	
	30	1.6763	1.9452	2.2134	2.5732	2.8526	10		2.1944	2.7636	3.4035	4.3831	5.2454	
	35	1.6410	1.8922	2.1403	2.4695	2.7226	11		2.1165	2.6358	3.2109	4.0769	4.8270	
	40	1.6146	1.8529	2.0864	2.3937	2.6281	12		2.0530	2.5328	3.0575	3.8363	4.5020	
	45	1.5941	1.8226	2.0450	2.3359	2.5563	13		2.0001	2.4479	2.9322	3.6425	4.2426	
	50	1.5778	1.7985	2.0122	2.2903	2.4999	14		1.9555	2.3768	2.8282	3.4832	4.0310	
	60	1.5534	1.7625	1.9636	2.2230	2.4171	15		1.9172	2.3163	2.7403	3.3498	3.8552	
	70	1.5360	1.7371	1.9293	2.1758	2.3591	16		1.8840	2.2642	2.6651	3.2367	3.7069	
	80	1.5230	1.7180	1.9037	2.1408	2.3163	17		1.8550	2.2189	2.6000	3.1394	3.5801	
	100	1.5047	1.6915	1.8682	2.0923	2.2572	18		1.8294	2.1791	2.5431	3.0550	3.4705	
	120	1.4926	1.6739	1.8447	2.0604	2.2183	19		1.8066	2.1438	2.4930	2.9810	3.3749	
	150	1.4804	1.6563	1.8213	2.0287	2.1800	20		1.7862	2.1124	2.4484	2.9156	3.2907	
	200	1.4683	1.6388	1.7981	1.9973	2.1420	21	1.7678	2.0842	2.4086	2.8574	3.2160		
	500	1.4464	1.6074	1.7566	1.9415	2.0748	22	1.7512	2.0587	2.3728	2.8052	3.1494		
	$+\infty$	1.4318	1.5865	1.7291	1.9048	2.0306	23	1.7360	2.0356	2.3404	2.7583	3.0895		
	20	1	61.740	248.01	993.10	6208.7	24836	24	1.7222	2.0146	2.3109	2.7157	3.0354	
2		9.4413	19.446	39.448	99.449	199.45	25	1.7095	1.9953	2.2840	2.6770	2.9862		
3		5.1845	8.6602	14.167	26.690	42.778	30	1.6590	1.9192	2.1785	2.5262	2.7960		
4		3.8443	5.8025	8.5599	14.020	20.167	35	1.6232	1.8657	2.1049	2.4222	2.6659		
5		3.2067	4.5581	6.3286	9.5526	12.903	40	1.5965	1.8260	2.0506	2.3461	2.5713		
6		2.8363	3.8742	5.1684	7.3958	9.5888	45	1.5757	1.7953	2.0089	2.2880	2.4994		
7		2.5947	3.4445	4.4667	6.1554	7.7540	50	1.5592	1.7709	1.9759	2.2423	2.4429		
8		2.4246	3.1503	3.9995	5.3591	6.6082	60	1.5343	1.7346	1.9269	2.1747	2.3598		
9		2.2983	2.9365	3.6669	4.8080	5.8318	70	1.5166	1.7088	1.8922	2.1271	2.3017		
10		2.2007	2.7740	3.4185	4.4054	5.2740	80	1.5034	1.6895	1.8664	2.0919	2.2587		
11		2.1230	2.6464	3.2261	4.0990	4.8552	100	1.4848	1.6626	1.8305	2.0431	2.1993		
12		2.0597	2.5436	3.0728	3.8584	4.5299	120	1.4724	1.6447	1.8067	2.0109	2.1603		
13		2.0070	2.4589	2.9477	3.6646	4.2703	150	1.4600	1.6268	1.7830	1.9790	2.1218		
14		1.9625	2.3879	2.8437	3.5052	4.0585	200	1.4476	1.6090	1.7595	1.9474	2.0836		
15		1.9243	2.3275	2.7559	3.3719	3.8826	500	1.4252	1.5770	1.7174	1.8910	2.0159		
16		1.8913	2.2756	2.6808	3.2587	3.7342	$+\infty$	1.4102	1.5557	1.6895	1.8539	1.9715		
17		1.8624	2.2304	2.6158	3.1615	3.6073	22	1	61.883	248.58	995.36	6222.8	24892	
18		1.8368	2.1906	2.5590	3.0771	3.4977		2	9.4458	19.450	39.452	99.454	199.45	
19		1.8142	2.1555	2.5089	3.0031	3.4020		3	5.1801	8.6484	14.144	26.640	42.693	
20		1.7938	2.1242	2.4645	2.9377	3.3178		4	3.8371	5.7872	8.5332	13.970	20.093	
21		1.7756	2.0960	2.4247	2.8796	3.2431		5	3.1979	4.5413	6.3011	9.5058	12.836	
22		1.7590	2.0707	2.3890	2.8274	3.1764		6	2.8266	3.8564	5.1406	7.3506	9.5264	
23		1.7439	2.0476	2.3567	2.7805	3.1165		7	2.5842	3.4260	4.4386	6.1113	7.6947	
24		1.7302	2.0267	2.3273	2.7380	3.0624		8	2.4135	3.1313	3.9711	5.3157	6.5510	
25		1.7175	2.0075	2.3005	2.6993	3.0133		9	2.2867	2.9169	3.6383	4.7651	5.7760	
30		1.6673	1.9317	2.1952	2.5487	2.8230		10	2.1887	2.7541	3.3897	4.3628	5.2192	
35		1.6317	1.8784	2.1218	2.4448	2.6930		11	2.1106	2.6261	3.1970	4.0566	4.8012	
40		1.6052	1.8389	2.0677	2.3689	2.5984		12	2.0469	2.5229	3.0434	3.8161	4.4765	
45		1.5846	1.8084	2.0262	2.3109	2.5266		13	1.9939	2.4379	2.9181	3.6224	4.2173	
50		1.5681	1.7841	1.9933	2.2652	2.4702		14	1.9490	2.3667	2.8139	3.4630	4.0058	
60	1.5435	1.7480	1.9445	2.1978	2.3872	15		1.9106	2.3060	2.7260	3.3297	3.8301		
70	1.5259	1.7223	1.9100	2.1504	2.3291	16		1.8774	2.2538	2.6507	3.2165	3.6819		
80	1.5128	1.7032	1.8843	2.1153	2.2862	17		1.8482	2.2084	2.5855	3.1192	3.5552		

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
22	18	1.8225	2.1685	2.5285	3.0348	3.4456	24	2	9.4496	19.454	39.456	99.458	199.46
	19	1.7997	2.1331	2.4783	2.9607	3.3500		3	5.1764	8.6385	14.124	26.598	42.622
	20	1.7792	2.1016	2.4337	2.8953	3.2659		4	3.8310	5.7744	8.5109	13.929	20.030
	21	1.7607	2.0733	2.3938	2.8370	3.1912		5	3.1905	4.5272	6.2780	9.4665	12.780
	22	1.7440	2.0478	2.3579	2.7849	3.1246		6	2.8183	3.8415	5.1172	7.3127	9.4742
	23	1.7288	2.0246	2.3254	2.7378	3.0647		7	2.5753	3.4105	4.4150	6.0743	7.6450
	24	1.7149	2.0035	2.2959	2.6953	3.0106		8	2.4041	3.1152	3.9472	5.2793	6.5029
	25	1.7021	1.9842	2.2690	2.6565	2.9615		9	2.2768	2.9005	3.6142	4.7290	5.7292
	30	1.6514	1.9077	2.1631	2.5055	2.7712		10	2.1784	2.7372	3.3654	4.3269	5.1732
	35	1.6154	1.8540	2.0893	2.4014	2.6410		11	2.1000	2.6090	3.1725	4.0209	4.7557
	40	1.5884	1.8141	2.0349	2.3252	2.5463		12	2.0360	2.5055	3.0187	3.7805	4.4314
	45	1.5676	1.7833	1.9930	2.2670	2.4744		13	1.9827	2.4202	2.8932	3.5868	4.1726
	50	1.5509	1.7588	1.9599	2.2211	2.4178		14	1.9377	2.3487	2.7888	3.4274	3.9614
	60	1.5259	1.7222	1.9106	2.1533	2.3346		15	1.8990	2.2878	2.7006	3.2940	3.7859
	70	1.5080	1.6962	1.8758	2.1057	2.2764		16	1.8656	2.2354	2.6252	3.1808	3.6378
	80	1.4947	1.6768	1.8499	2.0703	2.2333		17	1.8362	2.1898	2.5598	3.0835	3.5112
	100	1.4759	1.6497	1.8138	2.0214	2.1738		18	1.8103	2.1497	2.5027	2.9990	3.4017
	120	1.4634	1.6317	1.7899	1.9891	2.1347		19	1.7873	2.1141	2.4523	2.9249	3.3062
	150	1.4509	1.6137	1.7661	1.9570	2.0961		20	1.7667	2.0825	2.4076	2.8594	3.2220
	200	1.4383	1.5958	1.7424	1.9252	2.0578		21	1.7481	2.0540	2.3675	2.8010	3.1474
500	1.4157	1.5635	1.7000	1.8686	1.9899	22	1.7312	2.0283	2.3315	2.7488	3.0807		
$+\infty$	1.4006	1.5420	1.6719	1.8313	1.9453	23	1.7159	2.0050	2.2989	2.7017	3.0208		
23	1	61.945	248.83	996.35	6229.0	24917	24	1.7019	1.9838	2.2693	2.6591	2.9667	
	2	9.4478	19.452	39.454	99.456	199.46	25	1.6890	1.9643	2.2422	2.6203	2.9176	
	3	5.1781	8.6432	14.134	26.618	42.656	30	1.6377	1.8874	2.1359	2.4689	2.7272	
	4	3.8339	5.7805	8.5216	13.949	20.060	35	1.6013	1.8332	2.0617	2.3645	2.5969	
	5	3.1941	4.5339	6.2891	9.4853	12.807	40	1.5741	1.7929	2.0069	2.2880	2.5020	
	6	2.8223	3.8486	5.1284	7.3309	9.4992	45	1.5530	1.7618	1.9647	2.2296	2.4299	
	7	2.5796	3.4179	4.4263	6.0921	7.6688	50	1.5361	1.7371	1.9313	2.1835	2.3732	
	8	2.4086	3.1229	3.9587	5.2967	6.5260	60	1.5107	1.7001	1.8817	2.1154	2.2898	
	9	2.2816	2.9084	3.6257	4.7463	5.7516	70	1.4926	1.6738	1.8466	2.0674	2.2313	
	10	2.1833	2.7453	3.3770	4.3441	5.1953	80	1.4790	1.6542	1.8204	2.0318	2.1881	
	11	2.1051	2.6172	3.1843	4.0380	4.7775	100	1.4600	1.6267	1.7839	1.9826	2.1283	
	12	2.0412	2.5139	3.0306	3.7976	4.4530	120	1.4472	1.6084	1.7597	1.9500	2.0890	
	13	1.9881	2.4287	2.9052	3.6038	4.1940	150	1.4345	1.5902	1.7356	1.9177	2.0501	
	14	1.9431	2.3573	2.8009	3.4445	3.9827	200	1.4217	1.5720	1.7117	1.8857	2.0116	
	15	1.9046	2.2966	2.7128	3.3111	3.8071	500	1.3986	1.5392	1.6687	1.8285	1.9432	
	16	1.8712	2.2443	2.6374	3.1979	3.6589	$+\infty$	1.3832	1.5173	1.6402	1.7908	1.8983	
	17	1.8420	2.1987	2.5721	3.1006	3.5323	25	1	62.055	249.26	998.08	6239.8	24960
	18	1.8162	2.1587	2.5151	3.0161	3.4228		2	9.4513	19.456	39.458	99.459	199.46
	19	1.7932	2.1233	2.4648	2.9421	3.3272		3	5.1747	8.6341	14.115	26.579	42.591
	20	1.7727	2.0917	2.4201	2.8766	3.2431		4	3.8283	5.7687	8.5010	13.911	20.002
21	1.7541	2.0633	2.3801	2.8183	3.1684	5		3.1873	4.5209	6.2679	9.4491	12.755	
22	1.7374	2.0377	2.3442	2.7661	3.1018	6		2.8147	3.8348	5.1069	7.2960	9.4511	
23	1.7221	2.0144	2.3116	2.7191	3.0419	7		2.5714	3.4036	4.4045	6.0580	7.6230	
24	1.7081	1.9932	2.2821	2.6765	2.9878	8		2.3999	3.1081	3.9367	5.2631	6.4817	
25	1.6953	1.9738	2.2551	2.6377	2.9387	9		2.2725	2.8932	3.6035	4.7130	5.7084	
30	1.6443	1.8972	2.1490	2.4865	2.7483	10		2.1739	2.7298	3.3546	4.3111	5.1528	
35	1.6081	1.8432	2.0750	2.3822	2.6181	11		2.0953	2.6014	3.1616	4.0051	4.7356	
40	1.5810	1.8031	2.0203	2.3059	2.5233	12		2.0312	2.4977	3.0077	3.7647	4.4115	
45	1.5600	1.7722	1.9784	2.2476	2.4513	13		1.9778	2.4123	2.8821	3.5710	4.1528	
50	1.5432	1.7475	1.9451	2.2016	2.3947	14		1.9326	2.3407	2.7777	3.4116	3.9417	
60	1.5180	1.7108	1.8956	2.1336	2.3114	15		1.8939	2.2797	2.6894	3.2782	3.7662	
70	1.5000	1.6846	1.8606	2.0858	2.2530	16		1.8603	2.2272	2.6138	3.1650	3.6182	
80	1.4866	1.6651	1.8346	2.0504	2.2098	17		1.8309	2.1815	2.5484	3.0676	3.4916	
100	1.4677	1.6378	1.7983	2.0012	2.1502	18		1.8049	2.1413	2.4912	2.9831	3.3822	
120	1.4550	1.6197	1.7743	1.9688	2.1110	19		1.7818	2.1057	2.4408	2.9089	3.2867	
150	1.4424	1.6015	1.7503	1.9367	2.0723	20		1.7611	2.0739	2.3959	2.8434	3.2025	
200	1.4297	1.5834	1.7265	1.9047	2.0339	21	1.7424	2.0454	2.3558	2.7850	3.1279		
500	1.4069	1.5509	1.6838	1.8479	1.9657	22	1.7255	2.0196	2.3198	2.7328	3.0613		
$+\infty$	1.3916	1.5292	1.6555	1.8104	1.9209	23	1.7101	1.9963	2.2871	2.6856	3.0014		
24	1	62.002	249.05	997.25	6234.6	24940	24	1.6960	1.9750	2.2574	2.6430	2.9472	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	
25	25	1.6831	1.9554	2.2303	2.6041	2.8981	35	9	2.2418	2.8422	3.5292	4.6020	5.5643	
	30	1.6316	1.8782	2.1237	2.4526	2.7076		10	2.1420	2.6776	3.2794	4.2005	5.0110	
	35	1.5950	1.8239	2.0493	2.3480	2.5772		11	2.0623	2.5480	3.0856	3.8948	4.5955	
	40	1.5677	1.7835	1.9943	2.2714	2.4823		12	1.9971	2.4433	2.9309	3.6544	4.2725	
	45	1.5464	1.7522	1.9521	2.2129	2.4101		13	1.9428	2.3570	2.8046	3.4606	4.0146	
	50	1.5294	1.7273	1.9186	2.1667	2.3533		14	1.8968	2.2845	2.6994	3.3010	3.8040	
	60	1.5039	1.6902	1.8687	2.0984	2.2697		15	1.8573	2.2227	2.6104	3.1674	3.6289	
	70	1.4857	1.6638	1.8334	2.0503	2.2112		16	1.8230	2.1694	2.5342	3.0539	3.4811	
	80	1.4720	1.6440	1.8071	2.0146	2.1678		17	1.7929	2.1229	2.4681	2.9563	3.3547	
	100	1.4528	1.6163	1.7705	1.9652	2.1080		18	1.7663	2.0821	2.4103	2.8714	3.2453	
	120	1.4399	1.5980	1.7462	1.9325	2.0686		19	1.7426	2.0458	2.3593	2.7969	3.1498	
	150	1.4271	1.5796	1.7220	1.9001	2.0295		20	1.7213	2.0135	2.3139	2.7310	3.0656	
	200	1.4142	1.5612	1.6978	1.8679	1.9909		21	1.7021	1.9844	2.2733	2.6723	2.9909	
	500	1.3909	1.5282	1.6546	1.8105	1.9223		22	1.6847	1.9581	2.2366	2.6197	2.9241	
	$+\infty$	1.3753	1.5061	1.6259	1.7726	1.8771		23	1.6689	1.9342	2.2035	2.5722	2.8641	
	30	1	62.265	250.10	1001.4	6260.6		25044	24	1.6544	1.9124	2.1733	2.5292	2.8098
		2	9.4579	19.462	39.465	99.466		199.47	25	1.6410	1.8924	2.1458	2.4900	2.7605
3		5.1681	8.6166	14.081	26.505	42.466	30	1.5877	1.8132	2.0372	2.3369	2.5691		
4		3.8174	5.7459	8.4613	13.838	19.892	35	1.5497	1.7571	1.9611	2.2309	2.4377		
5		3.1741	4.4957	6.2269	9.3793	12.656	40	1.5211	1.7154	1.9047	2.1531	2.3418		
6		2.8000	3.8082	5.0652	7.2285	9.3582	45	1.4989	1.6830	1.8613	2.0934	2.2687		
7		2.5555	3.3758	4.3624	5.9920	7.5345	50	1.4810	1.6571	1.8267	2.0463	2.2112		
8		2.3830	3.0794	3.8940	5.1981	6.3961	60	1.4541	1.6183	1.7752	1.9764	2.1263		
9		2.2547	2.8637	3.5604	4.6486	5.6248	70	1.4348	1.5906	1.7386	1.9271	2.0666		
10		2.1554	2.6996	3.3110	4.2469	5.0706	80	1.4203	1.5699	1.7112	1.8904	2.0223		
11		2.0762	2.5705	3.1176	3.9411	4.6543	100	1.3998	1.5407	1.6729	1.8393	1.9610		
12		2.0115	2.4663	2.9633	3.7008	4.3309	120	1.3861	1.5213	1.6475	1.8055	1.9205		
13		1.9576	2.3803	2.8372	3.5070	4.0727	150	1.3723	1.5018	1.6220	1.7719	1.8803		
14		1.9119	2.3082	2.7324	3.3476	3.8619	200	1.3583	1.4822	1.5966	1.7383	1.8404		
15		1.8728	2.2468	2.6437	3.2141	3.6867	500	1.3331	1.4467	1.5508	1.6783	1.7692		
16		1.8388	2.1938	2.5678	3.1007	3.5389	$+\infty$	1.3160	1.4229	1.5201	1.6383	1.7221		
17		1.8090	2.1477	2.5020	3.0032	3.4124	40	1	62.529	251.14	1005.6	6286.8	25148	
18		1.7827	2.1071	2.4445	2.9185	3.3030		2	9.4662	19.471	39.473	99.474	199.47	
19		1.7592	2.0712	2.3937	2.8442	3.2075		3	5.1597	8.5944	14.037	26.411	42.308	
20		1.7382	2.0391	2.3486	2.7785	3.1234		4	3.8036	5.7170	8.4111	13.745	19.752	
21		1.7193	2.0102	2.3082	2.7200	3.0488		5	3.1573	4.4638	6.1750	9.2912	12.530	
22		1.7021	1.9842	2.2718	2.6675	2.9821		6	2.7812	3.7743	5.0125	7.1432	9.2408	
23		1.6864	1.9605	2.2389	2.6202	2.9221		7	2.5351	3.3404	4.3089	5.9084	7.4224	
24		1.6721	1.9390	2.2090	2.5773	2.8679		8	2.3614	3.0428	3.8398	5.1156	6.2875	
25		1.6589	1.9192	2.1816	2.5383	2.8187		9	2.2320	2.8259	3.5055	4.5666	5.5186	
30		1.6065	1.8409	2.0739	2.3860	2.6278		10	2.1317	2.6609	3.2554	4.1653	4.9659	
35		1.5691	1.7856	1.9986	2.2806	2.4969		11	2.0516	2.5309	3.0613	3.8596	4.5508	
40		1.5411	1.7444	1.9429	2.2034	2.4015		12	1.9861	2.4259	2.9063	3.6192	4.2282	
45		1.5193	1.7126	1.9000	2.1443	2.3288		13	1.9315	2.3392	2.7797	3.4253	3.9704	
50		1.5018	1.6872	1.8659	2.0976	2.2717		14	1.8852	2.2664	2.6742	3.2656	3.7600	
60		1.4755	1.6491	1.8152	2.0285	2.1874		15	1.8454	2.2043	2.5850	3.1319	3.5850	
70		1.4567	1.6220	1.7792	1.9797	2.1283		16	1.8108	2.1507	2.5085	3.0182	3.4372	
80		1.4426	1.6017	1.7523	1.9435	2.0845		17	1.7805	2.1040	2.4422	2.9205	3.3108	
100	1.4227	1.5733	1.7148	1.8933	2.0239	18	1.7537	2.0629	2.3842	2.8354	3.2014			
120	1.4094	1.5543	1.6899	1.8600	1.9840	19	1.7298	2.0264	2.3329	2.7608	3.1058			
150	1.3960	1.5354	1.6651	1.8270	1.9444	20	1.7083	1.9938	2.2873	2.6947	3.0215			
200	1.3826	1.5164	1.6403	1.7941	1.9051	21	1.6890	1.9645	2.2465	2.6359	2.9467			
500	1.3582	1.4821	1.5957	1.7353	1.8352	22	1.6714	1.9380	2.2097	2.5831	2.8799			
$+\infty$	1.3419	1.4591	1.5660	1.6964	1.7891	23	1.6554	1.9139	2.1763	2.5355	2.8197			
35	1	62.416	250.69	1003.8	6275.6	25103	24	1.6407	1.8920	2.1460	2.4923	2.7654		
	2	9.4627	19.467	39.469	99.471	199.47	25	1.6272	1.8718	2.1183	2.4530	2.7160		
	3	5.1633	8.6039	14.055	26.451	42.376	30	1.5732	1.7918	2.0089	2.2992	2.5241		
	4	3.8096	5.7294	8.4327	13.785	19.812	35	1.5346	1.7351	1.9321	2.1926	2.3922		
	5	3.1645	4.4775	6.1973	9.3291	12.584	40	1.5056	1.6928	1.8752	2.1142	2.2958		
	6	2.7893	3.7889	5.0352	7.1799	9.2913	45	1.4830	1.6599	1.8313	2.0542	2.2224		
	7	2.5439	3.3557	4.3319	5.9444	7.4707	50	1.4648	1.6337	1.7963	2.0066	2.1644		
	8	2.3707	3.0586	3.8632	5.1512	6.3343								

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
40	60	1.4373	1.5943	1.7440	1.9360	2.0789	50	15	1.8284	2.1780	2.5488	3.0814	3.5225
	70	1.4176	1.5661	1.7069	1.8861	2.0186		16	1.7934	2.1240	2.4719	2.9675	3.3747
	80	1.4027	1.5449	1.6790	1.8489	1.9739		17	1.7628	2.0769	2.4053	2.8694	3.2482
	100	1.3817	1.5151	1.6401	1.7972	1.9119		18	1.7356	2.0354	2.3468	2.7841	3.1387
	120	1.3676	1.4952	1.6141	1.7628	1.8709		19	1.7114	1.9986	2.2952	2.7093	3.0430
	150	1.3534	1.4752	1.5882	1.7286	1.8302		20	1.6896	1.9656	2.2493	2.6430	2.9586
	200	1.3390	1.4551	1.5621	1.6945	1.7897		21	1.6700	1.9360	2.2081	2.5838	2.8837
	500	1.3129	1.4186	1.5151	1.6332	1.7172		22	1.6521	1.9092	2.1710	2.5308	2.8167
	$+\infty$	1.2951	1.3940	1.4835	1.5923	1.6691		23	1.6358	1.8848	2.1374	2.4829	2.7564
	45	1	62.617	251.49	1007.0	6295.5		25183	24	1.6209	1.8625	2.1067	2.4395
2		9.4690	19.474	39.476	99.477	199.48	25	1.6072	1.8421	2.0787	2.3999	2.6522	
3		5.1569	8.5870	14.022	26.379	42.255	30	1.5522	1.7609	1.9681	2.2450	2.4594	
4		3.7990	5.7073	8.3943	13.714	19.705	35	1.5127	1.7032	1.8902	2.1374	2.3266	
5		3.1517	4.4530	6.1576	9.2616	12.487	40	1.4830	1.6600	1.8324	2.0581	2.2295	
6		2.7748	3.7629	4.9947	7.1145	9.2014	45	1.4597	1.6264	1.7876	1.9972	2.1553	
7		2.5282	3.3285	4.2908	5.8803	7.3847	50	1.4409	1.5995	1.7520	1.9490	2.0967	
8		2.3540	3.0304	3.8215	5.0878	6.2510	60	1.4126	1.5590	1.6985	1.8772	2.0100	
9		2.2242	2.8131	3.4869	4.5390	5.4827	70	1.3922	1.5300	1.6604	1.8263	1.9488	
10		2.1236	2.6477	3.2366	4.1377	4.9306	80	1.3767	1.5081	1.6318	1.7883	1.9033	
11		2.0432	2.5174	3.0422	3.8320	4.5158	100	1.3548	1.4772	1.5917	1.7353	1.8400	
12		1.9774	2.4121	2.8870	3.5915	4.1934	120	1.3400	1.4565	1.5649	1.7000	1.7981	
13		1.9225	2.3252	2.7601	3.3976	3.9358	150	1.3251	1.4357	1.5379	1.6648	1.7563	
14		1.8760	2.2521	2.6544	3.2378	3.7254	200	1.3100	1.4146	1.5108	1.6295	1.7147	
15		1.8360	2.1897	2.5650	3.1039	3.5504	500	1.2823	1.3762	1.4616	1.5658	1.6398	
16		1.8012	2.1360	2.4883	2.9902	3.4026	$+\infty$	1.2633	1.3501	1.4284	1.5231	1.5898	
17		1.7707	2.0890	2.4218	2.8922	3.2762	60	1	62.794	252.20	1009.8	6313.0	25253
18		1.7437	2.0477	2.3635	2.8071	3.1667		2	9.4746	19.479	39.481	99.482	199.48
19		1.7196	2.0110	2.3121	2.7323	3.0711		3	5.1512	8.5720	13.992	26.316	42.149
20		1.6980	1.9783	2.2663	2.6661	2.9868		4	3.7896	5.6877	8.3604	13.652	19.611
21		1.6785	1.9488	2.2253	2.6071	2.9119		5	3.1402	4.4314	6.1225	9.2020	12.402
22		1.6608	1.9221	2.1883	2.5542	2.8449		6	2.7620	3.7398	4.9589	7.0567	9.1219
23		1.6446	1.8979	2.1548	2.5065	2.7847		7	2.5142	3.3043	4.2544	5.8236	7.3088
24		1.6298	1.8757	2.1243	2.4632	2.7303		8	2.3391	3.0053	3.7844	5.0316	6.1772
25		1.6161	1.8554	2.0964	2.4237	2.6808		9	2.2085	2.7872	3.4493	4.4831	5.4104
30		1.5616	1.7748	1.9864	2.2693	2.4884		10	2.1072	2.6211	3.1984	4.0819	4.8592
35		1.5226	1.7175	1.9090	2.1622	2.3560		11	2.0261	2.4901	3.0035	3.7761	4.4450
40		1.4932	1.6748	1.8516	2.0833	2.2593		12	1.9597	2.3842	2.8478	3.5355	4.1229
45		1.4702	1.6415	1.8073	2.0228	2.1854		13	1.9043	2.2966	2.7204	3.3413	3.8655
50		1.4517	1.6149	1.7719	1.9749	2.1272		14	1.8572	2.2229	2.6142	3.1813	3.6552
60		1.4238	1.5749	1.7191	1.9037	2.0410		15	1.8168	2.1601	2.5242	3.0471	3.4803
70		1.4037	1.5463	1.6814	1.8533	1.9803		16	1.7816	2.1058	2.4471	2.9330	3.3324
80		1.3885	1.5247	1.6532	1.8157	1.9352		17	1.7506	2.0584	2.3801	2.8348	3.2058
100		1.3670	1.4944	1.6136	1.7633	1.8725		18	1.7232	2.0166	2.3214	2.7493	3.0962
120		1.3526	1.4741	1.5872	1.7284	1.8310		19	1.6988	1.9795	2.2696	2.6742	3.0004
150	1.3380	1.4536	1.5607	1.6937	1.7898	20		1.6768	1.9464	2.2234	2.6077	2.9159	
200	1.3232	1.4330	1.5341	1.6590	1.7487	21		1.6569	1.9165	2.1819	2.5484	2.8408	
500	1.2963	1.3955	1.4860	1.5964	1.6750	22		1.6389	1.8894	2.1446	2.4951	2.7736	
$+\infty$	1.2779	1.3701	1.4536	1.5546	1.6259	23		1.6224	1.8648	2.1107	2.4471	2.7132	
50	1	62.688	251.77	1008.1	6302.5	25211		24	1.6073	1.8424	2.0799	2.4035	2.6585
	2	9.4712	19.476	39.478	99.479	199.48		25	1.5934	1.8217	2.0516	2.3637	2.6088
	3	5.1546	8.5810	14.010	26.354	42.213		30	1.5376	1.7396	1.9400	2.2079	2.4151
	4	3.7952	5.6995	8.3808	13.690	19.667		35	1.4975	1.6811	1.8613	2.0994	2.2816
	5	3.1471	4.4444	6.1436	9.2378	12.454		40	1.4672	1.6373	1.8028	2.0194	2.1838
	6	2.7697	3.7537	4.9804	7.0915	9.1697		45	1.4434	1.6031	1.7574	1.9579	2.1090
	7	2.5226	3.3189	4.2763	5.8577	7.3544		50	1.4242	1.5757	1.7211	1.9090	2.0499
	8	2.3481	3.0204	3.8067	5.0654	6.2215		60	1.3952	1.5343	1.6668	1.8363	1.9622
	9	2.2180	2.8028	3.4719	4.5167	5.4539		70	1.3742	1.5046	1.6279	1.7846	1.9002
	10	2.1171	2.6371	3.2214	4.1155	4.9022		80	1.3583	1.4821	1.5987	1.7459	1.8540
	11	2.0364	2.5066	3.0268	3.8097	4.4876		100	1.3356	1.4504	1.5575	1.6918	1.7896
	12	1.9704	2.4010	2.8714	3.5692	4.1653		120	1.3203	1.4290	1.5299	1.6557	1.7469
	13	1.9153	2.3138	2.7443	3.3752	3.9078	150	1.3048	1.4074	1.5022	1.6195	1.7041	
	14	1.8686	2.2405	2.6384	3.2153	3.6975	200	1.2891	1.3856	1.4742	1.5833	1.6614	

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995
60	500	1.2600	1.3455	1.4231	1.5174	1.5843	80	22	1.6218	1.8641	2.1108	2.4496	2.7187
	$+\infty$	1.2400	1.3180	1.3883	1.4730	1.5325		23	1.6051	1.8392	2.0766	2.4013	2.6581
70	1	62.870	252.50	1011.0	6320.6	25283	24	1.5897	1.8164	2.0454	2.3573	2.6031	
	2	9.4769	19.481	39.484	99.485	199.49	25	1.5755	1.7955	2.0169	2.3173	2.5532	
	3	5.1487	8.5656	13.979	26.289	42.104	30	1.5187	1.7121	1.9039	2.1601	2.3584	
	4	3.7855	5.6793	8.3458	13.625	19.570	35	1.4776	1.6525	1.8240	2.0505	2.2237	
	5	3.1353	4.4220	6.1074	9.1763	12.366	40	1.4465	1.6077	1.7644	1.9694	2.1249	
	6	2.7564	3.7298	4.9434	7.0318	9.0877	45	1.4221	1.5726	1.7181	1.9069	2.0491	
	7	2.5082	3.2939	4.2386	5.7991	7.2760	50	1.4023	1.5445	1.6810	1.8571	1.9891	
	8	2.3326	2.9944	3.7684	5.0073	6.1453	60	1.3722	1.5019	1.6252	1.7828	1.8998	
	9	2.2017	2.7760	3.4330	4.4589	5.3791	70	1.3503	1.4711	1.5851	1.7298	1.8365	
	10	2.1000	2.6095	3.1818	4.0577	4.8283	80	1.3337	1.4477	1.5549	1.6901	1.7892	
	11	2.0187	2.4782	2.9867	3.7518	4.4143	100	1.3100	1.4146	1.5122	1.6342	1.7231	
	12	1.9520	2.3720	2.8307	3.5111	4.0924	120	1.2938	1.3922	1.4834	1.5968	1.6789	
	13	1.8963	2.2841	2.7030	3.3168	3.8350	150	1.2774	1.3694	1.4543	1.5592	1.6347	
	14	1.8490	2.2102	2.5966	3.1567	3.6248	200	1.2605	1.3463	1.4248	1.5212	1.5902	
	15	1.8083	2.1472	2.5064	3.0224	3.4498	500	1.2292	1.3033	1.3704	1.4517	1.5091	
	16	1.7729	2.0926	2.4291	2.9082	3.3018	$+\infty$	1.2072	1.2735	1.3329	1.4041	1.4540	
	17	1.7418	2.0450	2.3619	2.8097	3.1752	100	1	63.007	253.04	1013.2	6334.1	25337
	18	1.7142	2.0030	2.3030	2.7241	3.0655		2	9.4812	19.486	39.488	99.489	199.49
	19	1.6896	1.9657	2.2509	2.6488	2.9695		3	5.1443	8.5539	13.956	26.240	42.022
	20	1.6674	1.9323	2.2045	2.5822	2.8849		4	3.7782	5.6641	8.3195	13.577	19.497
	21	1.6474	1.9023	2.1629	2.5227	2.8097		5	3.1263	4.4051	6.0800	9.1299	12.300
22	1.6292	1.8751	2.1254	2.4693	2.7424	6		2.7463	3.7117	4.9154	6.9867	9.0257	
23	1.6125	1.8503	2.0913	2.4210	2.6818	7		2.4971	3.2749	4.2101	5.7547	7.2165	
24	1.5973	1.8276	2.0603	2.3773	2.6270	8		2.3208	2.9747	3.7393	4.9633	6.0875	
25	1.5833	1.8069	2.0319	2.3373	2.5772	9		2.1892	2.7556	3.4034	4.4150	5.3223	
30	1.5269	1.7240	1.9195	2.1808	2.3829	10		2.0869	2.5884	3.1517	4.0137	4.7721	
35	1.4862	1.6649	1.8402	2.0716	2.2488	11		2.0050	2.4566	2.9561	3.7077	4.3585	
40	1.4555	1.6205	1.7810	1.9911	2.1504	12		1.9379	2.3498	2.7996	3.4668	4.0368	
45	1.4313	1.5859	1.7351	1.9290	2.0751	13		1.8817	2.2614	2.6715	3.2723	3.7795	
50	1.4119	1.5580	1.6984	1.8797	2.0155	14		1.8340	2.1870	2.5646	3.1118	3.5692	
60	1.3822	1.5160	1.6433	1.8061	1.9269	15		1.7929	2.1234	2.4739	2.9772	3.3941	
70	1.3608	1.4857	1.6038	1.7537	1.8642	16		1.7570	2.0685	2.3961	2.8627	3.2460	
80	1.3444	1.4628	1.5740	1.7144	1.8174	17		1.7255	2.0204	2.3285	2.7639	3.1192	
100	1.3212	1.4303	1.5320	1.6594	1.7521	18		1.6976	1.9780	2.2692	2.6779	3.0093	
120	1.3055	1.4083	1.5038	1.6226	1.7086	19		1.6726	1.9403	2.2167	2.6023	2.9131	
150	1.2895	1.3861	1.4753	1.5856	1.6651	20		1.6501	1.9066	2.1699	2.5353	2.8282	
200	1.2731	1.3636	1.4465	1.5485	1.6215	21		1.6298	1.8761	2.1280	2.4755	2.7527	
500	1.2428	1.3220	1.3937	1.4807	1.5423	22	1.6113	1.8486	2.0901	2.4217	2.6852		
$+\infty$	1.2218	1.2933	1.3575	1.4346	1.4888	23	1.5944	1.8234	2.0557	2.3732	2.6243		
80	1	62.927	252.72	1011.9	6326.2	25306	24	1.5788	1.8005	2.0243	2.3291	2.5692	
	2	9.4787	19.483	39.485	99.487	199.49	25	1.5645	1.7794	1.9955	2.2888	2.5191	
	3	5.1469	8.5607	13.970	26.269	42.070	30	1.5069	1.6950	1.8816	2.1307	2.3234	
	4	3.7825	5.6730	8.3349	13.605	19.540	35	1.4653	1.6347	1.8009	2.0202	2.1880	
	5	3.1316	4.4150	6.0960	9.1570	12.338	40	1.4336	1.5892	1.7405	1.9383	2.0884	
	6	2.7522	3.7223	4.9318	7.0130	9.0619	45	1.4087	1.5536	1.6935	1.8751	2.0119	
	7	2.5036	3.2860	4.2268	5.7806	7.2513	50	1.3885	1.5249	1.6558	1.8248	1.9512	
	8	2.3277	2.9862	3.7563	4.9890	6.1213	60	1.3576	1.4814	1.5990	1.7493	1.8609	
	9	2.1965	2.7675	3.4207	4.4407	5.3555	70	1.3352	1.4498	1.5581	1.6954	1.7966	
	10	2.0946	2.6008	3.1694	4.0394	4.8050	80	1.3180	1.4259	1.5271	1.6548	1.7484	
	11	2.0130	2.4692	2.9740	3.7335	4.3912	100	1.2934	1.3917	1.4833	1.5977	1.6809	
	12	1.9461	2.3628	2.8178	3.4928	4.0693	120	1.2767	1.3685	1.4536	1.5592	1.6357	
	13	1.8903	2.2747	2.6900	3.2984	3.8120	150	1.2595	1.3448	1.4234	1.5204	1.5901	
	14	1.8428	2.2006	2.5833	3.1381	3.6017	200	1.2418	1.3206	1.3927	1.4811	1.5442	
	15	1.8019	2.1373	2.4930	3.0037	3.4267	500	1.2086	1.2753	1.3356	1.4084	1.4598	
	16	1.7664	2.0826	2.4154	2.8893	3.2787	$+\infty$	1.1850	1.2434	1.2956	1.3581	1.4017	
	17	1.7351	2.0348	2.3481	2.7908	3.1520	120	1	63.061	253.25	1014.0	6339.4	25359
	18	1.7073	1.9927	2.2890	2.7050	3.0422		2	9.4829	19.487	39.490	99.491	199.49
	19	1.6826	1.9552	2.2368	2.6296	2.9462		3	5.1425	8.5494	13.947	26.221	41.989
	20	1.6603	1.9217	2.1902	2.5628	2.8614		4	3.7753	5.6581	8.3092	13.558	19.468
	21	1.6401	1.8915	2.1485	2.5032	2.7861		5	3.1228	4.3985	6.0693	9.1118	12.274

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995		
120	6	2.7423	3.7047	4.9044	6.9690	9.0015	150	45	1.3900	1.5272	1.6596	1.8313	1.9607		
	7	2.4928	3.2674	4.1989	5.7373	7.1933		50	1.3691	1.4977	1.6210	1.7799	1.8989		
	8	2.3162	2.9669	3.7279	4.9461	6.0649		60	1.3372	1.4527	1.5625	1.7027	1.8067		
	9	2.1843	2.7475	3.3918	4.3978	5.3001		70	1.3137	1.4200	1.5202	1.6472	1.7408		
	10	2.0818	2.5801	3.1399	3.9965	4.7501		80	1.2957	1.3949	1.4880	1.6053	1.6912		
	11	1.9997	2.4480	2.9441	3.6904	4.3367		100	1.2698	1.3591	1.4422	1.5459	1.6213		
	12	1.9323	2.3410	2.7874	3.4494	4.0149		120	1.2519	1.3345	1.4109	1.5057	1.5741		
	13	1.8759	2.2524	2.6590	3.2548	3.7577		150	1.2335	1.3093	1.3789	1.4647	1.5264		
	14	1.8280	2.1778	2.5519	3.0942	3.5473		200	1.2143	1.2832	1.3460	1.4229	1.4777		
	15	1.7867	2.1141	2.4611	2.9595	3.3722		500	1.1775	1.2334	1.2836	1.3442	1.3868		
	16	1.7507	2.0589	2.3831	2.8447	3.2240		$+\infty$	1.1505	1.1972	1.2387	1.2881	1.3224		
	17	1.7191	2.0107	2.3153	2.7459	3.0971		200	1	63.167	253.68	1015.7	6350.0	25401	
	18	1.6910	1.9681	2.2558	2.6597	2.9871			2	9.4862	19.491	39.493	99.494	199.49	
	19	1.6659	1.9302	2.2032	2.5839	2.8908			3	5.1390	8.5402	13.929	26.183	41.925	
	20	1.6433	1.8963	2.1562	2.5168	2.8058			4	3.7695	5.6461	8.2885	13.520	19.411	
	21	1.6228	1.8657	2.1141	2.4568	2.7302			5	3.1157	4.3851	6.0478	9.0754	12.222	
	22	1.6041	1.8380	2.0760	2.4029	2.6625			6	2.7343	3.6904	4.8824	6.9336	8.9528	
	23	1.5871	1.8128	2.0415	2.3542	2.6015			7	2.4841	3.2525	4.1764	5.7024	7.1466	
	24	1.5715	1.7896	2.0099	2.3100	2.5463			8	2.3068	2.9513	3.7050	4.9114	6.0194	
	25	1.5570	1.7684	1.9811	2.2696	2.4961			9	2.1744	2.7313	3.3684	4.3631	5.2554	
	30	1.4989	1.6835	1.8664	2.1108	2.2998			10	2.0713	2.5634	3.1161	3.9617	4.7058	
	35	1.4568	1.6226	1.7851	1.9996	2.1637			11	1.9888	2.4308	2.9198	3.6555	4.2926	
	40	1.4248	1.5766	1.7242	1.9172	2.0636			12	1.9210	2.3233	2.7626	3.4143	3.9709	
	45	1.3995	1.5406	1.6767	1.8535	1.9865			13	1.8642	2.2343	2.6339	3.2194	3.7136	
	50	1.3789	1.5115	1.6386	1.8026	1.9254			14	1.8159	2.1592	2.5264	3.0585	3.5032	
	60	1.3476	1.4673	1.5810	1.7263	1.8341			15	1.7743	2.0950	2.4352	2.9235	3.3279	
	70	1.3246	1.4351	1.5394	1.6717	1.7691			16	1.7379	2.0395	2.3567	2.8084	3.1796	
	80	1.3071	1.4107	1.5079	1.6305	1.7203			17	1.7060	1.9909	2.2886	2.7092	3.0524	
	100	1.2819	1.3757	1.4631	1.5723	1.6516			18	1.6775	1.9479	2.2287	2.6227	2.9421	
	120	1.2646	1.3519	1.4327	1.5330	1.6055			19	1.6521	1.9097	2.1757	2.5467	2.8456	
	150	1.2468	1.3275	1.4017	1.4932	1.5590			20	1.6292	1.8755	2.1284	2.4792	2.7603	
	200	1.2285	1.3024	1.3700	1.4527	1.5118			21	1.6085	1.8446	2.0859	2.4189	2.6845	
	500	1.1936	1.2551	1.3105	1.3774	1.4245			22	1.5896	1.8165	2.0475	2.3646	2.6165	
	$+\infty$	1.1686	1.2214	1.2684	1.3246	1.3637			23	1.5723	1.7909	2.0126	2.3156	2.5552	
	150	1	63.114	253.46	1014.9	6344.7			25380	24	1.5563	1.7675	1.9807	2.2710	2.4997
		2	9.4846	19.489	39.491	99.492			199.49	25	1.5417	1.7460	1.9515	2.2303	2.4492
		3	5.1408	8.5448	13.938	26.202			41.957	30	1.4824	1.6597	1.8354	2.0700	2.2514
		4	3.7724	5.6521	8.2988	13.539			19.440	35	1.4393	1.5976	1.7527	1.9574	2.1140
		5	3.1193	4.3918	6.0586	9.0936			12.248	40	1.4064	1.5505	1.6906	1.8737	2.0125
		6	2.7383	3.6976	4.8934	6.9513			8.9772	45	1.3803	1.5135	1.6420	1.8087	1.9342
		7	2.4884	3.2600	4.1877	5.7199			7.1700	50	1.3590	1.4835	1.6029	1.7567	1.8719
		8	2.3115	2.9591	3.7165	4.9287			6.0422	60	1.3264	1.4377	1.5435	1.6784	1.7785
		9	2.1793	2.7394	3.3801	4.3805			5.2778	70	1.3024	1.4042	1.5003	1.6220	1.7116
		10	2.0766	2.5718	3.1280	3.9792			4.7280	80	1.2839	1.3786	1.4674	1.5792	1.6611
		11	1.9942	2.4394	2.9320	3.6730			4.3147	100	1.2571	1.3416	1.4203	1.5184	1.5897
12		1.9266	2.3322	2.7750	3.4319	3.9930	120		1.2385	1.3162	1.3880	1.4770	1.5413		
13		1.8701	2.2434	2.6465	3.2371	3.7357	150		1.2193	1.2899	1.3548	1.4347	1.4921		
14		1.8220	2.1686	2.5392	3.0764	3.5254	200		1.1991	1.2626	1.3204	1.3912	1.4416		
15		1.7805	2.1046	2.4482	2.9415	3.3501	500		1.1598	1.2096	1.2543	1.3081	1.3459		
16		1.7444	2.0492	2.3700	2.8267	3.2019	$+\infty$		1.1301	1.1700	1.2053	1.2472	1.2763		
17		1.7126	2.0008	2.3020	2.7276	3.0748	500		1	63.264	254.06	1017.2	6359.5	25439	
18		1.6843	1.9581	2.2423	2.6413	2.9647			2	9.4892	19.494	39.496	99.497	199.50	
19		1.6590	1.9200	2.1895	2.5654	2.8683			3	5.1358	8.5320	13.913	26.148	41.867	
20		1.6363	1.8860	2.1424	2.4981	2.7832			4	3.7642	5.6353	8.2698	13.486	19.359	
21		1.6157	1.8552	2.1001	2.4379	2.7075			5	3.1093	4.3731	6.0283	9.0424	12.175	
22		1.5969	1.8273	2.0618	2.3839	2.6396			6	2.7270	3.6775	4.8625	6.9015	8.9088	
23		1.5797	1.8019	2.0271	2.3350	2.5785		7	2.4761	3.2389	4.1560	5.6707	7.1044		
24		1.5640	1.7787	1.9954	2.2906	2.5232		8	2.2983	2.9371	3.6842	4.8799	5.9782		
25		1.5494	1.7573	1.9664	2.2501	2.4727		9	2.1653	2.7166	3.3471	4.3317	5.2148		
30		1.4907	1.6717	1.8510	2.0905	2.2758		10	2.0618	2.5481	3.0944	3.9302	4.6656		
35		1.4482	1.6102	1.7691	1.9787	2.1391		11	1.9788	2.4151	2.8977	3.6238	4.2525		
40		1.4157	1.5637	1.7076	1.8956	2.0383		12	1.9106	2.3071	2.7401	3.3823	3.9309		

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ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	ν_1	ν_2	0.9	0.95	0.975	0.99	0.995	
500	13	1.8535	2.2176	2.6109	3.1871	3.6735	$+\infty$	150	1.1694	1.2226	1.2714	1.3314	1.3744	
	14	1.8048	2.1422	2.5030	3.0260	3.4630		200	1.1439	1.1885	1.2290	1.2785	1.3137	
	15	1.7628	2.0776	2.4114	2.8906	3.2875		500	1.0871	1.1132	1.1365	1.1644	1.1840	
	16	1.7262	2.0217	2.3326	2.7752	3.1389		$+\infty$	1.0000	1.0000	1.0000	1.0000	1.0000	
	17	1.6939	1.9727	2.2640	2.6757	3.0115								
	18	1.6651	1.9294	2.2038	2.5889	2.9010								
	19	1.6394	1.8909	2.1504	2.5124	2.8042								
	20	1.6162	1.8562	2.1027	2.4446	2.7186								
	21	1.5952	1.8250	2.0599	2.3840	2.6425								
	22	1.5760	1.7966	2.0211	2.3294	2.5742								
	23	1.5585	1.7708	1.9859	2.2800	2.5126								
	24	1.5423	1.7470	1.9537	2.2351	2.4568								
	25	1.5274	1.7252	1.9242	2.1941	2.4059								
	30	1.4670	1.6375	1.8065	2.0321	2.2066								
	35	1.4229	1.5742	1.7224	1.9180	2.0676								
	40	1.3890	1.5260	1.6590	1.8329	1.9647								
	45	1.3621	1.4879	1.6092	1.7666	1.8850								
	50	1.3400	1.4569	1.5689	1.7133	1.8214								
	60	1.3060	1.4093	1.5075	1.6327	1.7256								
	70	1.2807	1.3743	1.4625	1.5743	1.6565								
	80	1.2611	1.3472	1.4280	1.5296	1.6041								
	100	1.2324	1.3079	1.3781	1.4656	1.5291								
	120	1.2122	1.2804	1.3434	1.4215	1.4778								
	150	1.1910	1.2516	1.3073	1.3757	1.4248								
	200	1.1683	1.2211	1.2691	1.3277	1.3694								
	500	1.1216	1.1587	1.1918	1.2317	1.2596								
	$+\infty$	1.0819	1.1063	1.1277	1.1530	1.1704								
	$+\infty$	1	63.328	254.31	1018.3	6365.9	25464							
		2	9.4912	19.496	39.498	99.499	199.50							
		3	5.1337	8.5264	13.902	26.125	41.828							
		4	3.7607	5.6281	8.2573	13.463	19.325							
		5	3.1050	4.3650	6.0153	9.0204	12.144							
		6	2.7222	3.6689	4.8491	6.8800	8.8793							
		7	2.4708	3.2298	4.1423	5.6495	7.0760							
		8	2.2926	2.9276	3.6702	4.8588	5.9506							
9		2.1592	2.7067	3.3329	4.3105	5.1875								
10		2.0554	2.5379	3.0798	3.9090	4.6385								
11		1.9721	2.4045	2.8828	3.6024	4.2255								
12		1.9036	2.2962	2.7249	3.3608	3.9039								
13		1.8462	2.2064	2.5955	3.1654	3.6465								
14		1.7973	2.1307	2.4872	3.0040	3.4359								
15		1.7551	2.0658	2.3953	2.8684	3.2602								
16		1.7182	2.0096	2.3163	2.7528	3.1115								
17		1.6856	1.9604	2.2474	2.6530	2.9839								
18		1.6567	1.9168	2.1869	2.5660	2.8732								
19		1.6308	1.8780	2.1333	2.4893	2.7762								
20		1.6074	1.8432	2.0853	2.4212	2.6904								
21		1.5862	1.8117	2.0422	2.3603	2.6140								
22		1.5668	1.7831	2.0032	2.3055	2.5455								
23		1.5490	1.7570	1.9677	2.2558	2.4837								
24		1.5327	1.7330	1.9353	2.2107	2.4276								
25	1.5176	1.7110	1.9055	2.1694	2.3765									
30	1.4564	1.6223	1.7867	2.0062	2.1760									
35	1.4115	1.5580	1.7016	1.8910	2.0359									
40	1.3769	1.5089	1.6371	1.8047	1.9318									
45	1.3493	1.4700	1.5864	1.7374	1.8510									
50	1.3267	1.4383	1.5452	1.6831	1.7863									
60	1.2915	1.3893	1.4821	1.6006	1.6885									
70	1.2652	1.3529	1.4357	1.5404	1.6176									
80	1.2446	1.3247	1.3997	1.4942	1.5634									
100	1.2142	1.2832	1.3473	1.4272	1.4853									
120	1.1926	1.2539	1.3104	1.3805	1.4311									

→

7 Non-parametric tests

Rejection regions of the Wilcoxon signed-rank test (one sample)

The table below contains the end points of the rejection regions for the Wilcoxon signed-rank test for inference about the median η of a symmetric distribution.

Denote by w_- the rank sum of the observations less than η_0 , and denote by w_+ the rank sum of the observations greater than η_0 .

- $H_0: \eta \leq \eta_0$ vs. $H_1: \eta > \eta_0$ (one-sided): Reject H_0 if w_- is not larger than the tabulated value.
- $H_0: \eta \geq \eta_0$ vs. $H_1: \eta < \eta_0$ (one-sided): Reject H_0 if w_+ is not larger than the tabulated value.
- $H_0: \eta = \eta_0$ vs. $H_1: \eta \neq \eta_0$ (two-sided): Reject H_0 if $\min\{w_+, w_-\}$ is not larger than the tabulated value.

“–” indicates that H_0 is never rejected for the chosen size α and sample size n .

n	size α (one-sided)				n	size α (one-sided)				n	size α (one-sided)			
	5%	2.5%	1%	0.5%		5%	2.5%	1%	0.5%		5%	2.5%	1%	0.5%
	size α (two-sided)					size α (two-sided)					size α (two-sided)			
	10%	5%	2%	1%		10%	5%	2%	1%		10%	5%	2%	1%
1	–	–	–	–	31	163	147	130	118	61	715	672	623	589
2	–	–	–	–	32	175	159	140	128	62	741	697	646	611
3	–	–	–	–	33	187	170	151	138	63	767	721	669	634
4	–	–	–	–	34	200	182	162	148	64	793	747	693	657
5	0	–	–	–	35	213	195	173	159	65	820	772	718	681
6	2	0	–	–	36	227	208	185	171	66	847	798	742	705
7	3	2	0	–	37	241	221	198	182	67	875	825	768	729
8	5	3	1	0	38	256	235	211	194	68	903	852	793	754
9	8	5	3	1	39	271	249	224	207	69	931	879	819	779
10	10	8	5	3	40	286	264	238	220	70	960	907	846	805
11	13	10	7	5	41	302	279	252	233	71	990	936	873	831
12	17	13	9	7	42	319	294	266	247	72	1020	964	901	858
13	21	17	12	9	43	336	310	281	261	73	1050	994	928	884
14	25	21	15	12	44	353	327	296	276	74	1081	1023	957	912
15	30	25	19	15	45	371	343	312	291	75	1112	1053	986	940
16	35	29	23	19	46	389	361	328	307	76	1144	1084	1015	968
17	41	34	27	23	47	407	378	345	322	77	1176	1115	1044	997
18	47	40	32	27	48	426	396	362	339	78	1209	1147	1075	1026
19	53	46	37	32	49	446	415	379	355	79	1242	1179	1105	1056
20	60	52	43	37	50	466	434	397	373	80	1276	1211	1136	1086
21	67	58	49	42	51	486	453	416	390	81	1310	1244	1168	1116
22	75	65	55	48	52	507	473	434	408	82	1345	1277	1200	1147
23	83	73	62	54	53	529	494	454	427	83	1380	1311	1232	1178
24	91	81	69	61	54	550	514	473	445	84	1415	1345	1265	1210
25	100	89	76	68	55	573	536	493	465	85	1451	1380	1298	1242
26	110	98	84	75	56	595	557	514	484	86	1487	1415	1332	1275
27	119	107	92	83	57	618	579	535	504	87	1524	1451	1366	1308
28	130	116	101	91	58	642	602	556	525	88	1561	1487	1400	1342
29	140	126	110	100	59	666	625	578	546	89	1599	1523	1435	1376
30	151	137	120	109	60	690	648	600	567	90	1638	1560	1471	1410

Rejection regions of the Mann-Whitney/Wilcoxon two-sample test

The table below contains the end points of the rejection regions for the Mann-Whitney test for inference about the medians η_1 and η_2 of two translated symmetric distributions based on two samples of size n_1 and n_2 , respectively.

Denote by r_1 and r_2 the rank sums obtained for the observations from the first and the second sample. Define $u_1 = r_1 - \frac{n_1(n_1+1)}{2}$ and $u_2 = r_2 - \frac{n_2(n_2+1)}{2}$.

- $H_0: \eta_1 \leq \eta_2$ vs. $H_1: \eta_1 > \eta_2$ (one-sided): Reject H_0 if u_2 is not larger than the tabulated value.
- $H_0: \eta_1 \geq \eta_2$ vs. $H_1: \eta_1 < \eta_2$ (one-sided): Reject H_0 if u_1 is not larger than the tabulated value.
- $H_0: \eta_1 = \eta_2$ vs. $H_1: \eta_1 \neq \eta_2$ (two-sided): Reject H_0 if $\min\{u_1, u_2\}$ is not larger than the tabulated value.

“–” indicates that H_0 is never rejected for the chosen size α and sample sizes n_1 and n_2 .

The corresponding tables are shown on pages 35 and 36.

Rejection regions of the Mann-Whitney/Wilcoxon two-sample test (size α : 5% one-sided, 10% two-sided)

n_1	n_2																								
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	-	-	-	0	0	0	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6	
3	-	-	0	1	2	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	13	14	
4	-	0	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22	23	
5	0	1	2	4	5	6	8	9	11	12	13	15	16	18	19	20	22	23	25	26	28	29	30	32	
6	0	2	3	5	7	8	10	12	14	16	17	19	21	23	25	26	28	30	32	34	36	37	39	41	
7	0	2	4	6	8	11	13	15	17	19	21	24	26	28	30	33	35	37	39	41	44	46	48	50	
8	1	3	5	8	10	13	15	18	20	23	26	28	31	33	36	39	41	44	47	49	52	54	57	60	
9	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	
10	1	4	7	11	14	17	20	24	27	31	34	37	41	44	48	51	55	58	62	65	68	72	75	79	
11	1	5	8	12	16	19	23	27	31	34	38	42	46	50	54	57	61	65	69	73	77	81	85	89	
12	2	5	9	13	17	21	26	30	34	38	42	47	51	55	60	64	68	72	77	81	85	90	94	98	
13	2	6	10	15	19	24	28	33	37	42	47	51	56	61	65	70	75	80	84	89	94	98	103	108	
14	2	7	11	16	21	26	31	36	41	46	51	56	61	66	71	77	82	87	92	97	102	107	113	118	
15	3	7	12	18	23	28	33	39	44	50	55	61	66	72	77	83	88	94	100	105	111	116	122	128	
16	3	8	14	19	25	30	36	42	48	54	60	65	71	77	83	89	95	101	107	113	119	125	131	137	
17	3	9	15	20	26	33	39	45	51	57	64	70	77	83	89	96	102	109	115	121	128	134	141	147	
18	4	9	16	22	28	35	41	48	55	61	68	75	82	88	95	102	109	116	123	130	136	143	150	157	
19	4	10	17	23	30	37	44	51	58	65	72	80	87	94	101	109	116	123	130	138	145	152	160	167	
20	4	11	18	25	32	39	47	54	62	69	77	84	92	100	107	115	123	130	138	146	154	161	169	177	
21	5	11	19	26	34	41	49	57	65	73	81	89	97	105	113	121	130	138	146	154	162	170	179	187	
22	5	12	20	28	36	44	52	60	68	77	85	94	102	111	119	128	136	145	154	162	171	179	188	197	
23	5	13	21	29	37	46	54	63	72	81	90	98	107	116	125	134	143	152	161	170	179	189	198	207	
24	6	13	22	30	39	48	57	66	75	85	94	103	113	122	131	141	150	160	169	179	188	198	207	217	
25	6	14	23	32	41	50	60	69	79	89	98	108	118	128	137	147	157	167	177	187	197	207	217	227	

Rejection regions of the Mann-Whitney/Wilcoxon two-sample test (size α : 2.5% one-sided, 5% two-sided)

n_1	n_2																								
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	-	-	-	-	-	-	0	0	0	0	1	1	1	1	1	2	2	2	2	3	3	3	3	3	
3	-	-	-	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	
4	-	-	0	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	14	15	16	17	17	18	
5	-	0	1	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20	22	23	24	25	27	
6	-	1	2	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27	29	30	32	33	35	
7	-	1	3	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	
8	0	2	4	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41	43	45	48	50	53	
9	0	2	4	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48	50	53	56	59	62	
10	0	3	5	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55	58	61	64	67	71	
11	0	3	6	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62	65	69	73	76	80	
12	1	4	7	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69	73	77	81	85	89	
13	1	4	8	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76	80	85	89	94	98	
14	1	5	9	13	17	22	26	31	36	40	45	50	55	59	64	69	74	78	83	88	93	98	102	107	
15	1	5	10	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90	96	101	106	111	117	
16	1	6	11	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98	103	109	115	120	126	
17	2	6	11	17	22	28	34	39	45	51	57	63	69	75	81	87	93	99	105	111	117	123	129	135	
18	2	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112	119	125	132	138	145	
19	2	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119	126	133	140	147	154	
20	2	8	14	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127	134	141	149	156	163	
21	3	8	15	22	29	36	43	50	58	65	73	80	88	96	103	111	119	126	134	142	150	157	165	173	
22	3	9	16	23	30	38	45	53	61	69	77	85	93	101	109	117	125	133	141	150	158	166	174	182	
23	3	9	17	24	32	40	48	56	64	73	81	89	98	106	115	123	132	140	149	157	166	175	183	192	
24	3	10	17	25	33	42	50	59	67	76	85	94	102	111	120	129	138	147	156	165	174	183	192	201	
25	3	10	18	27	35	44	53	62	71	80	89	98	107	117	126	135	145	154	163	173	182	192	201	211	

Rejection regions of the Mann-Whitney/Wilcoxon two-sample test (size α : 1% one-sided, 2% two-sided)

n_1	n_2																								
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	1	1	1	1	1	1	1	
3	-	-	-	-	-	0	0	1	1	1	2	2	2	3	3	4	4	4	5	5	5	6	6	7	
4	-	-	-	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13	13	
5	-	-	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
6	-	-	1	2	3	4	6	7	8	9	11	12	13	15	16	18	19	20	22	23	24	26	27	29	
7	-	0	1	3	4	6	7	9	11	12	14	16	17	19	21	23	24	26	28	30	31	33	35	36	
8	-	0	2	4	6	7	9	11	13	15	17	20	22	24	26	28	30	32	34	36	38	40	42	45	
9	-	1	3	5	7	9	11	14	16	18	21	23	26	28	31	33	36	38	40	43	45	48	50	53	
10	-	1	3	6	8	11	13	16	19	22	24	27	30	33	36	38	41	44	47	50	53	55	58	61	
11	-	1	4	7	9	12	15	18	22	25	28	31	34	37	41	44	47	50	53	57	60	63	66	70	
12	-	2	5	8	11	14	17	21	24	28	31	35	38	42	46	49	53	56	60	64	67	71	75	78	
13	0	2	5	9	12	16	20	23	27	31	35	39	43	47	51	55	59	63	67	71	75	79	83	87	
14	0	2	6	10	13	17	22	26	30	34	38	43	47	51	56	60	65	69	73	78	82	87	91	95	
15	0	3	7	11	15	19	24	28	33	37	42	47	51	56	61	66	70	75	80	85	90	94	99	104	
16	0	3	7	12	16	21	26	31	36	41	46	51	56	61	66	71	76	82	87	92	97	102	108	113	
17	0	4	8	13	18	23	28	33	38	44	49	55	60	66	71	77	82	88	93	99	105	110	116	122	
18	0	4	9	14	19	24	30	36	41	47	53	59	65	70	76	82	88	94	100	106	112	118	124	130	
19	1	4	9	15	20	26	32	38	44	50	56	63	69	75	82	88	94	101	107	113	120	126	133	139	
20	1	5	10	16	22	28	34	40	47	53	60	67	73	80	87	93	100	107	114	121	127	134	141	148	
21	1	5	11	17	23	30	36	43	50	57	64	71	78	85	92	99	106	113	121	128	135	142	150	157	
22	1	5	11	18	24	31	38	45	53	60	67	75	82	90	97	105	112	120	127	135	143	150	158	166	
23	1	6	12	19	26	33	40	48	55	63	71	79	87	94	102	110	118	126	134	142	150	158	167	175	
24	1	6	13	20	27	35	42	50	58	66	75	83	91	99	108	116	124	133	141	150	158	167	175	184	
25	1	7	13	21	29	36	45	53	61	70	78	87	95	104	113	122	130	139	148	157	166	175	184	192	

Rejection regions of the Mann-Whitney/Wilcoxon two-sample test (size α : 0.5% one-sided, 1% two-sided)

n_1	n_2																								
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	
3	-	-	-	-	-	-	-	0	0	0	1	1	1	2	2	2	2	3	3	3	4	4	4	5	
4	-	-	-	-	0	0	1	1	2	2	3	3	4	5	5	6	6	7	8	8	9	9	10	10	
5	-	-	-	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13	14	14	15	16	17	
6	-	-	0	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18	19	21	22	23	24	
7	-	-	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24	25	27	29	30	32	
8	-	-	1	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30	32	34	35	37	39	
9	-	0	1	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36	38	40	43	45	47	
10	-	0	2	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42	44	47	50	52	55	
11	-	0	2	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	
12	-	1	3	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54	58	61	64	68	71	
13	-	1	3	7	10	13	17	20	24	27	31	34	38	42	45	49	53	57	60	64	68	72	75	79	
14	-	1	4	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67	71	75	79	83	87	
15	-	2	5	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73	78	82	87	91	96	
16	-	2	5	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79	84	89	94	99	104	
17	-	2	6	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86	91	96	102	107	112	
18	-	2	6	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92	98	104	109	115	121	
19	0	3	7	12	17	22	28	33	39	45	51	57	63	69	74	81	87	93	99	105	111	117	123	129	
20	0	3	8	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105	112	118	125	131	138	
21	0	3	8	14	19	25	32	38	44	51	58	64	71	78	84	91	98	105	112	118	125	132	139	146	
22	0	4	9	14	21	27	34	40	47	54	61	68	75	82	89	96	104	111	118	125	133	140	147	155	
23	0	4	9	15	22	29	35	43	50	57	64	72	79	87	94	102	109	117	125	132	140	148	155	163	
24	0	4	10	16	23	30	37	45	52	60	68	75	83	91	99	107	115	123	131	139	147	155	164	172	
25	0	5	10	17	24	32	39	47	55	63	71	79	87	96	104	112	121	129	138	146	155	163	172	180	

8 Correlation

Critical values for the linear correlation coefficient

The table below contains the critical values for testing whether the linear correlation coefficient is 0. The test statistic used is the empirical correlation coefficient r computed from a sample of size n .

The test is based on the same assumptions as the simple linear model, i.e. $Y_i|X_i = x_i \sim \mathbf{N}(\beta_0 + \beta_1 x_i, \sigma^2)$ with the Y_i being independent. This assumption for example holds when (X_i, Y_i) are i.i.d. realisations from a bivariate normal distribution.

$H_0: \rho \leq 0$ vs. $H_1: \rho > 0$ (one-sided): Reject H_0 if r is greater than the tabulated value.
 $H_0: \rho \geq 0$ vs. $H_1: \rho < 0$ (one-sided): Reject H_0 if $-r$ is greater than the tabulated value.
 $H_0: \rho = 0$ vs. $H_1: \rho \neq 0$ (two-sided): Reject H_0 if $|r|$ is greater than the tabulated value.

n	size α (one-sided)				n	size α (one-sided)			
	5%	2.5%	1%	0.5%		5%	2.5%	1%	0.5%
	size α (two-sided)					size α (two-sided)			
	10%	5%	2%	1%		10%	5%	2%	1%
3	0.9877	0.9969	0.9995	0.9999	40	0.2638	0.3120	0.3665	0.4026
4	0.9000	0.9500	0.9800	0.9900	41	0.2605	0.3081	0.3621	0.3978
5	0.8054	0.8783	0.9343	0.9587	42	0.2573	0.3044	0.3578	0.3932
6	0.7293	0.8114	0.8822	0.9172	43	0.2542	0.3008	0.3536	0.3887
7	0.6694	0.7545	0.8329	0.8745	44	0.2512	0.2973	0.3496	0.3843
8	0.6215	0.7067	0.7887	0.8343	45	0.2483	0.2940	0.3457	0.3801
9	0.5822	0.6664	0.7498	0.7977	46	0.2455	0.2907	0.3420	0.3761
10	0.5494	0.6319	0.7155	0.7646	47	0.2429	0.2876	0.3384	0.3721
11	0.5214	0.6021	0.6851	0.7348	48	0.2403	0.2845	0.3348	0.3683
12	0.4973	0.5760	0.6581	0.7079	49	0.2377	0.2816	0.3314	0.3646
13	0.4762	0.5529	0.6339	0.6835	50	0.2353	0.2787	0.3281	0.3610
14	0.4575	0.5324	0.6120	0.6614	55	0.2241	0.2656	0.3129	0.3445
15	0.4409	0.5140	0.5923	0.6411	60	0.2144	0.2542	0.2997	0.3301
16	0.4259	0.4973	0.5742	0.6226	65	0.2058	0.2441	0.2880	0.3173
17	0.4124	0.4821	0.5577	0.6055	70	0.1982	0.2352	0.2776	0.3060
18	0.4000	0.4683	0.5425	0.5897	75	0.1914	0.2272	0.2682	0.2957
19	0.3887	0.4555	0.5285	0.5751	80	0.1852	0.2199	0.2597	0.2864
20	0.3783	0.4438	0.5155	0.5614	85	0.1796	0.2133	0.2520	0.2780
21	0.3687	0.4329	0.5034	0.5487	90	0.1745	0.2072	0.2449	0.2702
22	0.3598	0.4227	0.4921	0.5368	95	0.1698	0.2017	0.2384	0.2631
23	0.3515	0.4132	0.4815	0.5256	100	0.1654	0.1966	0.2324	0.2565
24	0.3438	0.4044	0.4716	0.5151	110	0.1576	0.1874	0.2216	0.2446
25	0.3365	0.3961	0.4622	0.5052	120	0.1509	0.1793	0.2122	0.2343
26	0.3297	0.3882	0.4534	0.4958	130	0.1449	0.1723	0.2039	0.2252
27	0.3233	0.3809	0.4451	0.4869	140	0.1396	0.1660	0.1965	0.2170
28	0.3172	0.3739	0.4372	0.4785	150	0.1348	0.1603	0.1898	0.2097
29	0.3115	0.3673	0.4297	0.4705	160	0.1305	0.1552	0.1838	0.2031
30	0.3061	0.3610	0.4226	0.4629	170	0.1266	0.1506	0.1783	0.1971
31	0.3009	0.3550	0.4158	0.4556	180	0.1230	0.1463	0.1733	0.1915
32	0.2960	0.3494	0.4093	0.4487	190	0.1197	0.1424	0.1687	0.1865
33	0.2913	0.3440	0.4032	0.4421	200	0.1166	0.1388	0.1644	0.1818
34	0.2869	0.3388	0.3972	0.4357	210	0.1138	0.1354	0.1604	0.1774
35	0.2826	0.3338	0.3916	0.4296	220	0.1112	0.1323	0.1568	0.1733
36	0.2785	0.3291	0.3862	0.4238	230	0.1087	0.1294	0.1533	0.1695
37	0.2746	0.3246	0.3810	0.4182	240	0.1064	0.1267	0.1501	0.1660
38	0.2709	0.3202	0.3760	0.4128	250	0.1043	0.1241	0.1471	0.1626
39	0.2673	0.3160	0.3712	0.4076	500	0.0736	0.0877	0.1040	0.1151

Note that confidence intervals and tests for the linear correlation coefficient can also be constructed using Fisher's z-transform, which is tabulated in section 9.

9 Fisher's z-transform

Fisher's z-transform

The function tabulated below is Fisher's z-transform

$$z(r) \equiv \tanh^{-1}(r) = \frac{1}{2} \log \left(\frac{1+r}{1-r} \right).$$

r	r									
	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
0.00	0.0000	0.0010	0.0020	0.0030	0.0040	0.0050	0.0060	0.0070	0.0080	0.0090
0.01	0.0100	0.0110	0.0120	0.0130	0.0140	0.0150	0.0160	0.0170	0.0180	0.0190
0.02	0.0200	0.0210	0.0220	0.0230	0.0240	0.0250	0.0260	0.0270	0.0280	0.0290
0.03	0.0300	0.0310	0.0320	0.0330	0.0340	0.0350	0.0360	0.0370	0.0380	0.0390
0.04	0.0400	0.0410	0.0420	0.0430	0.0440	0.0450	0.0460	0.0470	0.0480	0.0490
0.05	0.0500	0.0510	0.0520	0.0530	0.0541	0.0551	0.0561	0.0571	0.0581	0.0591
0.06	0.0601	0.0611	0.0621	0.0631	0.0641	0.0651	0.0661	0.0671	0.0681	0.0691
0.07	0.0701	0.0711	0.0721	0.0731	0.0741	0.0751	0.0761	0.0772	0.0782	0.0792
0.08	0.0802	0.0812	0.0822	0.0832	0.0842	0.0852	0.0862	0.0872	0.0882	0.0892
0.09	0.0902	0.0913	0.0923	0.0933	0.0943	0.0953	0.0963	0.0973	0.0983	0.0993
0.10	0.1003	0.1013	0.1024	0.1034	0.1044	0.1054	0.1064	0.1074	0.1084	0.1094
0.11	0.1104	0.1115	0.1125	0.1135	0.1145	0.1155	0.1165	0.1175	0.1186	0.1196
0.12	0.1206	0.1216	0.1226	0.1236	0.1246	0.1257	0.1267	0.1277	0.1287	0.1297
0.13	0.1307	0.1318	0.1328	0.1338	0.1348	0.1358	0.1368	0.1379	0.1389	0.1399
0.14	0.1409	0.1419	0.1430	0.1440	0.1450	0.1460	0.1471	0.1481	0.1491	0.1501
0.15	0.1511	0.1522	0.1532	0.1542	0.1552	0.1563	0.1573	0.1583	0.1593	0.1604
0.16	0.1614	0.1624	0.1634	0.1645	0.1655	0.1665	0.1676	0.1686	0.1696	0.1706
0.17	0.1717	0.1727	0.1737	0.1748	0.1758	0.1768	0.1779	0.1789	0.1799	0.1809
0.18	0.1820	0.1830	0.1841	0.1851	0.1861	0.1872	0.1882	0.1892	0.1903	0.1913
0.19	0.1923	0.1934	0.1944	0.1955	0.1965	0.1975	0.1986	0.1996	0.2007	0.2017
0.20	0.2027	0.2038	0.2048	0.2059	0.2069	0.2079	0.2090	0.2100	0.2111	0.2121
0.21	0.2132	0.2142	0.2153	0.2163	0.2174	0.2184	0.2195	0.2205	0.2216	0.2226
0.22	0.2237	0.2247	0.2258	0.2268	0.2279	0.2289	0.2300	0.2310	0.2321	0.2331
0.23	0.2342	0.2352	0.2363	0.2374	0.2384	0.2395	0.2405	0.2416	0.2427	0.2437
0.24	0.2448	0.2458	0.2469	0.2480	0.2490	0.2501	0.2512	0.2522	0.2533	0.2543
0.25	0.2554	0.2565	0.2575	0.2586	0.2597	0.2608	0.2618	0.2629	0.2640	0.2650
0.26	0.2661	0.2672	0.2683	0.2693	0.2704	0.2715	0.2726	0.2736	0.2747	0.2758
0.27	0.2769	0.2779	0.2790	0.2801	0.2812	0.2823	0.2833	0.2844	0.2855	0.2866
0.28	0.2877	0.2888	0.2899	0.2909	0.2920	0.2931	0.2942	0.2953	0.2964	0.2975
0.29	0.2986	0.2997	0.3008	0.3018	0.3029	0.3040	0.3051	0.3062	0.3073	0.3084
0.30	0.3095	0.3106	0.3117	0.3128	0.3139	0.3150	0.3161	0.3172	0.3183	0.3194
0.31	0.3205	0.3217	0.3228	0.3239	0.3250	0.3261	0.3272	0.3283	0.3294	0.3305
0.32	0.3316	0.3328	0.3339	0.3350	0.3361	0.3372	0.3383	0.3395	0.3406	0.3417
0.33	0.3428	0.3440	0.3451	0.3462	0.3473	0.3484	0.3496	0.3507	0.3518	0.3530
0.34	0.3541	0.3552	0.3564	0.3575	0.3586	0.3598	0.3609	0.3620	0.3632	0.3643
0.35	0.3654	0.3666	0.3677	0.3689	0.3700	0.3712	0.3723	0.3734	0.3746	0.3757
0.36	0.3769	0.3780	0.3792	0.3803	0.3815	0.3826	0.3838	0.3850	0.3861	0.3873
0.37	0.3884	0.3896	0.3907	0.3919	0.3931	0.3942	0.3954	0.3966	0.3977	0.3989
0.38	0.4001	0.4012	0.4024	0.4036	0.4047	0.4059	0.4071	0.4083	0.4094	0.4106
0.39	0.4118	0.4130	0.4142	0.4153	0.4165	0.4177	0.4189	0.4201	0.4213	0.4225
0.40	0.4236	0.4248	0.4260	0.4272	0.4284	0.4296	0.4308	0.4320	0.4332	0.4344
0.41	0.4356	0.4368	0.4380	0.4392	0.4404	0.4416	0.4428	0.4441	0.4453	0.4465
0.42	0.4477	0.4489	0.4501	0.4513	0.4526	0.4538	0.4550	0.4562	0.4574	0.4587
0.43	0.4599	0.4611	0.4624	0.4636	0.4648	0.4660	0.4673	0.4685	0.4698	0.4710
0.44	0.4722	0.4735	0.4747	0.4760	0.4772	0.4784	0.4797	0.4809	0.4822	0.4834
0.45	0.4847	0.4860	0.4872	0.4885	0.4897	0.4910	0.4922	0.4935	0.4948	0.4960
0.46	0.4973	0.4986	0.4999	0.5011	0.5024	0.5037	0.5049	0.5062	0.5075	0.5088
0.47	0.5101	0.5114	0.5126	0.5139	0.5152	0.5165	0.5178	0.5191	0.5204	0.5217
0.48	0.5230	0.5243	0.5256	0.5269	0.5282	0.5295	0.5308	0.5321	0.5334	0.5347
0.49	0.5361	0.5374	0.5387	0.5400	0.5413	0.5427	0.5440	0.5453	0.5466	0.5480

→

r	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
0.50	0.5493	0.5506	0.5520	0.5533	0.5547	0.5560	0.5573	0.5587	0.5600	0.5614
0.51	0.5627	0.5641	0.5654	0.5668	0.5682	0.5695	0.5709	0.5722	0.5736	0.5750
0.52	0.5763	0.5777	0.5791	0.5805	0.5818	0.5832	0.5846	0.5860	0.5874	0.5888
0.53	0.5901	0.5915	0.5929	0.5943	0.5957	0.5971	0.5985	0.5999	0.6013	0.6027
0.54	0.6042	0.6056	0.6070	0.6084	0.6098	0.6112	0.6127	0.6141	0.6155	0.6169
0.55	0.6184	0.6198	0.6213	0.6227	0.6241	0.6256	0.6270	0.6285	0.6299	0.6314
0.56	0.6328	0.6343	0.6358	0.6372	0.6387	0.6401	0.6416	0.6431	0.6446	0.6460
0.57	0.6475	0.6490	0.6505	0.6520	0.6535	0.6550	0.6565	0.6580	0.6595	0.6610
0.58	0.6625	0.6640	0.6655	0.6670	0.6685	0.6700	0.6716	0.6731	0.6746	0.6761
0.59	0.6777	0.6792	0.6807	0.6823	0.6838	0.6854	0.6869	0.6885	0.6900	0.6916
0.60	0.6931	0.6947	0.6963	0.6978	0.6994	0.7010	0.7026	0.7042	0.7057	0.7073
0.61	0.7089	0.7105	0.7121	0.7137	0.7153	0.7169	0.7185	0.7201	0.7218	0.7234
0.62	0.7250	0.7266	0.7283	0.7299	0.7315	0.7332	0.7348	0.7365	0.7381	0.7398
0.63	0.7414	0.7431	0.7447	0.7464	0.7481	0.7498	0.7514	0.7531	0.7548	0.7565
0.64	0.7582	0.7599	0.7616	0.7633	0.7650	0.7667	0.7684	0.7701	0.7718	0.7736
0.65	0.7753	0.7770	0.7788	0.7805	0.7823	0.7840	0.7858	0.7875	0.7893	0.7910
0.66	0.7928	0.7946	0.7964	0.7981	0.7999	0.8017	0.8035	0.8053	0.8071	0.8089
0.67	0.8107	0.8126	0.8144	0.8162	0.8180	0.8199	0.8217	0.8236	0.8254	0.8273
0.68	0.8291	0.8310	0.8328	0.8347	0.8366	0.8385	0.8404	0.8423	0.8441	0.8460
0.69	0.8480	0.8499	0.8518	0.8537	0.8556	0.8576	0.8595	0.8614	0.8634	0.8653
0.70	0.8673	0.8693	0.8712	0.8732	0.8752	0.8772	0.8792	0.8812	0.8832	0.8852
0.71	0.8872	0.8892	0.8912	0.8933	0.8953	0.8973	0.8994	0.9014	0.9035	0.9056
0.72	0.9076	0.9097	0.9118	0.9139	0.9160	0.9181	0.9202	0.9223	0.9245	0.9266
0.73	0.9287	0.9309	0.9330	0.9352	0.9373	0.9395	0.9417	0.9439	0.9461	0.9483
0.74	0.9505	0.9527	0.9549	0.9571	0.9594	0.9616	0.9639	0.9661	0.9684	0.9707
0.75	0.9730	0.9752	0.9775	0.9798	0.9822	0.9845	0.9868	0.9892	0.9915	0.9939
0.76	0.9962	0.9986	1.0010	1.0034	1.0058	1.0082	1.0106	1.0130	1.0154	1.0179
0.77	1.0203	1.0228	1.0253	1.0277	1.0302	1.0327	1.0352	1.0378	1.0403	1.0428
0.78	1.0454	1.0479	1.0505	1.0531	1.0557	1.0583	1.0609	1.0635	1.0661	1.0688
0.79	1.0714	1.0741	1.0768	1.0795	1.0822	1.0849	1.0876	1.0903	1.0931	1.0958
0.80	1.0986	1.1014	1.1042	1.1070	1.1098	1.1127	1.1155	1.1184	1.1212	1.1241
0.81	1.1270	1.1299	1.1329	1.1358	1.1388	1.1417	1.1447	1.1477	1.1507	1.1538
0.82	1.1568	1.1599	1.1630	1.1660	1.1692	1.1723	1.1754	1.1786	1.1817	1.1849
0.83	1.1881	1.1914	1.1946	1.1979	1.2011	1.2044	1.2077	1.2111	1.2144	1.2178
0.84	1.2212	1.2246	1.2280	1.2315	1.2349	1.2384	1.2419	1.2454	1.2490	1.2526
0.85	1.2562	1.2598	1.2634	1.2671	1.2707	1.2745	1.2782	1.2819	1.2857	1.2895
0.86	1.2933	1.2972	1.3011	1.3050	1.3089	1.3129	1.3169	1.3209	1.3249	1.3290
0.87	1.3331	1.3372	1.3414	1.3456	1.3498	1.3540	1.3583	1.3626	1.3670	1.3714
0.88	1.3758	1.3802	1.3847	1.3892	1.3938	1.3984	1.4030	1.4077	1.4124	1.4171
0.89	1.4219	1.4268	1.4316	1.4365	1.4415	1.4465	1.4516	1.4566	1.4618	1.4670
0.90	1.4722	1.4775	1.4828	1.4882	1.4937	1.4992	1.5047	1.5103	1.5160	1.5217
0.91	1.5275	1.5334	1.5393	1.5453	1.5513	1.5574	1.5636	1.5698	1.5762	1.5826
0.92	1.5890	1.5956	1.6022	1.6089	1.6157	1.6226	1.6296	1.6366	1.6438	1.6510
0.93	1.6584	1.6658	1.6734	1.6811	1.6888	1.6967	1.7047	1.7129	1.7211	1.7295
0.94	1.7380	1.7467	1.7555	1.7645	1.7736	1.7828	1.7923	1.8019	1.8117	1.8216
0.95	1.8318	1.8421	1.8527	1.8635	1.8745	1.8857	1.8972	1.9090	1.9210	1.9333
0.96	1.9459	1.9588	1.9721	1.9857	1.9996	2.0139	2.0287	2.0439	2.0595	2.0756
0.97	2.0923	2.1095	2.1273	2.1457	2.1649	2.1847	2.2054	2.2269	2.2494	2.2729
0.98	2.2976	2.3235	2.3507	2.3796	2.4101	2.4427	2.4774	2.5147	2.5550	2.5987
0.99	2.6467	2.6996	2.7587	2.8257	2.9031	2.9945	3.1063	3.2504	3.4534	3.8002

Inverse z-transform

The function tabulated below is the inverse of Fisher's z-transform

$$r(z) \equiv \tanh(z) = \frac{e^{2z} - 1}{e^{2z} + 1} = \frac{e^z - e^{-z}}{e^z + e^{-z}} = \frac{\sinh(z)}{\cosh(z)}.$$

z	z									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	0.0000	0.0100	0.0200	0.0300	0.0400	0.0500	0.0599	0.0699	0.0798	0.0898
0.1	0.0997	0.1096	0.1194	0.1293	0.1391	0.1489	0.1586	0.1684	0.1781	0.1877
0.2	0.1974	0.2070	0.2165	0.2260	0.2355	0.2449	0.2543	0.2636	0.2729	0.2821
0.3	0.2913	0.3004	0.3095	0.3185	0.3275	0.3364	0.3452	0.3540	0.3627	0.3714
0.4	0.3799	0.3885	0.3969	0.4053	0.4136	0.4219	0.4301	0.4382	0.4462	0.4542
0.5	0.4621	0.4699	0.4777	0.4854	0.4930	0.5005	0.5080	0.5154	0.5227	0.5299
0.6	0.5370	0.5441	0.5511	0.5581	0.5649	0.5717	0.5784	0.5850	0.5915	0.5980
0.7	0.6044	0.6107	0.6169	0.6231	0.6291	0.6351	0.6411	0.6469	0.6527	0.6584
0.8	0.6640	0.6696	0.6751	0.6805	0.6858	0.6911	0.6963	0.7014	0.7064	0.7114
0.9	0.7163	0.7211	0.7259	0.7306	0.7352	0.7398	0.7443	0.7487	0.7531	0.7574
1.0	0.7616	0.7658	0.7699	0.7739	0.7779	0.7818	0.7857	0.7895	0.7932	0.7969
1.1	0.8005	0.8041	0.8076	0.8110	0.8144	0.8178	0.8210	0.8243	0.8275	0.8306
1.2	0.8337	0.8367	0.8397	0.8426	0.8455	0.8483	0.8511	0.8538	0.8565	0.8591
1.3	0.8617	0.8643	0.8668	0.8692	0.8717	0.8741	0.8764	0.8787	0.8810	0.8832
1.4	0.8854	0.8875	0.8896	0.8917	0.8937	0.8957	0.8977	0.8996	0.9015	0.9033
1.5	0.9051	0.9069	0.9087	0.9104	0.9121	0.9138	0.9154	0.9170	0.9186	0.9201
1.6	0.9217	0.9232	0.9246	0.9261	0.9275	0.9289	0.9302	0.9316	0.9329	0.9341
1.7	0.9354	0.9366	0.9379	0.9391	0.9402	0.9414	0.9425	0.9436	0.9447	0.9458
1.8	0.9468	0.9478	0.9488	0.9498	0.9508	0.9517	0.9527	0.9536	0.9545	0.9554
1.9	0.9562	0.9571	0.9579	0.9587	0.9595	0.9603	0.9611	0.9618	0.9626	0.9633
2.0	0.9640	0.9647	0.9654	0.9661	0.9667	0.9674	0.9680	0.9687	0.9693	0.9699
2.1	0.9705	0.9710	0.9716	0.9721	0.9727	0.9732	0.9737	0.9743	0.9748	0.9753
2.2	0.9757	0.9762	0.9767	0.9771	0.9776	0.9780	0.9785	0.9789	0.9793	0.9797
2.3	0.9801	0.9805	0.9809	0.9812	0.9816	0.9820	0.9823	0.9827	0.9830	0.9833
2.4	0.9837	0.9840	0.9843	0.9846	0.9849	0.9852	0.9855	0.9858	0.9861	0.9863
2.5	0.9866	0.9869	0.9871	0.9874	0.9876	0.9879	0.9881	0.9884	0.9886	0.9888
2.6	0.9890	0.9892	0.9895	0.9897	0.9899	0.9901	0.9903	0.9905	0.9906	0.9908
2.7	0.9910	0.9912	0.9914	0.9915	0.9917	0.9919	0.9920	0.9922	0.9923	0.9925
2.8	0.9926	0.9928	0.9929	0.9931	0.9932	0.9933	0.9935	0.9936	0.9937	0.9938
2.9	0.9940	0.9941	0.9942	0.9943	0.9944	0.9945	0.9946	0.9947	0.9949	0.9950
3.0	0.9951	0.9952	0.9952	0.9953	0.9954	0.9955	0.9956	0.9957	0.9958	0.9959
3.1	0.9959	0.9960	0.9961	0.9962	0.9963	0.9963	0.9964	0.9965	0.9965	0.9966
3.2	0.9967	0.9967	0.9968	0.9969	0.9969	0.9970	0.9971	0.9971	0.9972	0.9972
3.3	0.9973	0.9973	0.9974	0.9974	0.9975	0.9975	0.9976	0.9976	0.9977	0.9977
3.4	0.9978	0.9978	0.9979	0.9979	0.9979	0.9980	0.9980	0.9981	0.9981	0.9981
3.5	0.9982	0.9982	0.9982	0.9983	0.9983	0.9984	0.9984	0.9984	0.9984	0.9985
3.6	0.9985	0.9985	0.9986	0.9986	0.9986	0.9986	0.9987	0.9987	0.9987	0.9988
3.7	0.9988	0.9988	0.9988	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.8	0.9990	0.9990	0.9990	0.9991	0.9991	0.9991	0.9991	0.9991	0.9991	0.9992
3.9	0.9992	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993	0.9993	0.9993	0.9993

These tables were generated from tables.Rnw (r323) on Thu Jun 21 09:27:50 2012 using GNU R 2.14.1 (for the computations) and L^AT_EX (for the typesetting).

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