

常用数理统计表

中国科学院数学研究所概率统计室编

科学出版社

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1974

内 容 简 介

本数表选编了统计分析、数据处理、抽样检查、试验安排等方面常用的一些数理统计表,此外,也选编了一些在应用统计方法时经常用到的一般数学用表,如平方表、开方表和对数表等。本表以应用和普及为主,对表的查法及其主要应用作了扼要的介绍,对编表的原理则没有作详细说明。本表基本上可满足一般实际应用的需要,对科研工作者也有一定的参考价值。

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前 言

在毛主席革命路线的指引下，在三大革命运动的实践中，特别是无产阶级文化大革命以来，广大工农兵、技术人员和科研工作者逐步掌握并运用了数理统计方法。他们迫切希望有一本常用的数理统计表。为此，我们从已出版的数理统计表中选编了这本数表，共收集 42 种表，个别表作了验算和修正，有的表作了调整以利查阅。鉴于已出版的数理统计表种类很多，我们仅选择了统计分析、数据处理、抽样检查、试验安排等方面常用的一些数表。此外，也选编了一些在应用统计方法时经常用到的一般数学用表，如平方表、开方表、对数表等。但由于篇幅的限制，还有一些重要的统计表，如超几何分布表、非中心 t 分布表等未能编入。

为了帮助读者学会使用本表，对表的查法及其主要应用大多作了扼要的说明，有的还举出一些实际应用的例子。由于本表是以应用和普及为主，因此对编表的原理没有作详细说明。本表基本上可满足一般实际应用的需要，对科研工作者也有一定的参考价值。

由于编者水平所限，缺点错误一定不少，希望读者批评指正。

中国科学院数学研究所概率统计室

1972.11

目 录

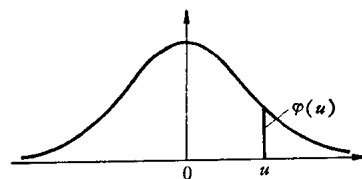
数表	1
1. 正态分布的密度函数表	1
2. 正态分布表	2
3. 正态分布的双侧分位数(u_α)表	4
4. χ^2 分布表	4
5. χ^2 分布的上侧分位数(χ^2_α)表	6
6. t 分布表	7
7. t 分布的双侧分位数(t_α)表	8
8. F 检验的临界值(F_α)表	9
9. 非中心 F 分布的非中心参数表	14
10. 多重比较中的 q 表	16
11. 多重比较中的 S 表	17
12. 检验相关系数 $\rho=0$ 的临界值(r_α)表	18
13. $\hat{\rho}$ 与 z 的换算表	18
14. 二项分布表	19
15. 二项分布参数 P 的置信区间表	21
16. 泊松(Poisson)分布表	25
17. 泊松(Poisson)分布参数 λ 的置信区间表	30
18. 柯尔莫哥洛夫(Колмогоров)检验的临界值($D_{n\alpha}$)表	30
19. D_n 的极限分布表	31
20. 斯米尔诺夫(Смирнов)检验的临界值($m(n_1, n_2, \alpha)$)表	32
21. 一次抽样方案的接收概率计算表	33
22. 一次抽样方案计算表	34
23. 符号检验表	35
24. 秩和检验表	35
25. 游程总数检验表	36
26. 游程长度检验表	37
27. 极差系数 d_n 和极差分布的分位数表	38
28. 正交多项式表	38
29. 正交拉丁方表	41
30. 正交表	43
31. 平衡不完全区组设计的参数表	64
32. 平衡不完全区组设计表	65
33. 随机数表	75
34. 平方表	77
35. 开方表	79
36. 倒数表	83

37. 常用对数表	85
38. 自然对数表	87
39. 阶乘和阶乘的对数表	93
40. 二项系数表	94
41. 二项系数的对数表	94
42. 常用常数表	96
表的说明	97
表 1—3	97
表 4—5	102
表 6—7	105
表 8—9	108
表 10	111
表 11	112
表 12—13	114
表 14—15	116
表 16—17	117
表 18—20	118
表 21—22	120
表 23	122
表 24	123
表 25—26	124
表 27	126
表 28	127
表 29	130
表 30	131
表 31—32	137
表 33	141
参考书目	143

数 表

1. 正态分布的密度函数表

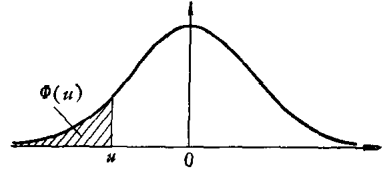
$$\varphi(u) = \frac{1}{\sqrt{2\pi}} e^{-\frac{u^2}{2}}$$



u	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	u
0.0	0.3989	0.3989	0.3989	0.3983	0.3986	0.3984	0.3982	0.3930	0.3977	0.3973	0.0
0.1	.3970	.3965	.3961	.3956	.3951	.3945	.3939	.3932	.3925	.3918	0.1
0.2	.3910	.3902	.3894	.3885	.3876	.3867	.3857	.3847	.3836	.3825	0.2
0.3	.3814	.3802	.3790	.3778	.3765	.3752	.3739	.3725	.3712	.3697	0.3
0.4	.3683	.3668	.3653	.3637	.3621	.3605	.3589	.3572	.3555	.3538	0.4
0.5	.3521	.3503	.3485	.3467	.3448	.3429	.3410	.3391	.3372	.3352	0.5
0.6	.3332	.3312	.3292	.3271	.3251	.3230	.3209	.3187	.3166	.3144	0.6
0.7	.3123	.3101	.3079	.3056	.3034	.3011	.2939	.2966	.2943	.2920	0.7
0.8	.2897	.2874	.2850	.2827	.2803	.2780	.2756	.2732	.2709	.2685	0.8
0.9	.2661	.2637	.2613	.2589	.2565	.2541	.2516	.2492	.2468	.2444	0.9
1.0	.2420	.2396	.2371	.2347	.2323	.2299	.2275	.2251	.2227	.2203	1.0
1.1	.2179	.2155	.2131	.2107	.2083	.2059	.2036	.2012	.1989	.1965	1.1
1.2	.1942	.1919	.1895	.1872	.1849	.1826	.1804	.1781	.1758	.1736	1.2
1.3	.1714	.1691	.1669	.1647	.1626	.1604	.1582	.1561	.1539	.1518	1.3
1.4	.1497	.1476	.1456	.1435	.1415	.1394	.1374	.1354	.1334	.1315	1.4
1.5	.1295	.1276	.1257	.1238	.1219	.1200	.1182	.1163	.1145	.1127	1.5
1.6	.1109	.1092	.1074	.1057	.1040	.1023	.1006	.0989	.0973	.0956	1.6
1.7	.0940	.0924	.0908	.0893	.0878	.0862	.0847	.0832	.0818	.0803	1.7
1.8	.0789	.0775	.0761	.0747	.0734	.0720	.0707	.0694	.0681	.0668	1.8
1.9	.0656	.0643	.0631	.0619	.0607	.0595	.0584	.0573	.0561	.0550	1.9
2.0	.0539	.0529	.0518	.0508	.0493	.0487	.0478	.0468	.0458	.0449	2.0
2.1	.0439	.0430	.0421	.0412	.0404	.0395	.0387	.0378	.0370	.0362	2.1
2.2	.0354	.0347	.0339	.0331	.0324	.0317	.0310	.0304	.0296	.0289	2.2
2.3	.0283	.0276	.0270	.0264	.0258	.0252	.0246	.0240	.0234	.0229	2.3
2.4	.0223	.0218	.0213	.0208	.0203	.0198	.0193	.0188	.0184	.0179	2.4
2.5	.0175	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143	.0139	2.5
2.6	.0135	.0132	.0128	.0125	.0122	.0119	.0116	.0113	.0110	.0107	2.6
2.7	.0104	.0101	.0097	.0094	.0092	.0090	.0088	.0086	.0084	.0082	2.7
2.8	.0079	.0077	.0075	.0073	.0071	.0069	.0067	.0065	.0063	.0061	2.8
2.9	.0059	.0057	.0056	.0054	.0052	.0051	.0049	.0048	.0047	.0046	2.9
3.0	.0044	.0043	.0041	.0040	.0039	.0038	.0036	.0035	.0034	.0033	3.0
3.1	.0032	.0031	.0030	.0029	.0028	.0027	.0026	.0025	.0024	.0023	3.1
3.2	.0023	.0022	.0021	.0020	.0019	.0018	.0017	.0016	.0015	.0014	3.2
3.3	.0013	.0012	.0011	.0010	.0009	.0008	.0007	.0006	.0005	.0004	3.3
3.4	.0012	.0011	.0010	.0009	.0008	.0007	.0006	.0005	.0004	.0003	3.4
3.5	.0037	.0034	.0031	.0028	.0025	.0022	.0019	.0016	.0013	.0010	3.5
3.6	.0011	.0009	.0007	.0005	.0004	.0003	.0002	.0001	.0000	.0000	3.6
3.7	.0012	.0010	.0008	.0006	.0004	.0003	.0002	.0001	.0000	.0000	3.7
3.8	.0013	.0011	.0009	.0007	.0005	.0004	.0003	.0002	.0001	.0000	3.8
3.9	.0014	.0012	.0010	.0008	.0006	.0004	.0003	.0002	.0001	.0000	3.9
4.0	.0013	.0012	.0011	.0010	.0009	.0008	.0007	.0006	.0005	.0004	4.0
4.1	.0012	.0011	.0010	.0009	.0008	.0007	.0006	.0005	.0004	.0003	4.1
4.2	.0011	.0010	.0009	.0008	.0007	.0006	.0005	.0004	.0003	.0002	4.2
4.3	.0010	.0009	.0008	.0007	.0006	.0005	.0004	.0003	.0002	.0001	4.3
4.4	.0009	.0008	.0007	.0006	.0005	.0004	.0003	.0002	.0001	.0000	4.4
4.5	.0008	.0007	.0006	.0005	.0004	.0003	.0002	.0001	.0000	.0000	4.5
4.6	.0007	.0006	.0005	.0004	.0003	.0002	.0001	.0000	.0000	.0000	4.6
4.7	.0006	.0005	.0004	.0003	.0002	.0001	.0000	.0000	.0000	.0000	4.7
4.8	.0005	.0004	.0003	.0002	.0001	.0000	.0000	.0000	.0000	.0000	4.8
4.9	.0004	.0003	.0002	.0001	.0000	.0000	.0000	.0000	.0000	.0000	4.9

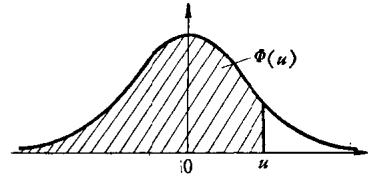
2. 正态分布表

$$\Phi(u) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^u e^{-\frac{x^2}{2}} dx \quad (u \leq 0)$$



u	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	u
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641	-0.0
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247	-0.1
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859	-0.2
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483	-0.3
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121	-0.4
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776	-0.5
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451	-0.6
-0.7	.2420	.2389	.2358	.2327	.2297	.2266	.2236	.2206	.2177	.2148	-0.7
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867	-0.8
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611	-0.9
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379	-1.0
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170	-1.1
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.09853	-1.2
-1.3	.09680	.09510	.09342	.09176	.09012	.08851	.08691	.08534	.08379	.08226	-1.3
-1.4	.08076	.07927	.07780	.07636	.07493	.07353	.07215	.07078	.06944	.06811	-1.4
-1.5	.06681	.06552	.06426	.06301	.06178	.06057	.05938	.05821	.05705	.05592	-1.5
-1.6	.05480	.05370	.05262	.05155	.05050	.04947	.04846	.04746	.04648	.04551	-1.6
-1.7	.04457	.04368	.04272	.04182	.04093	.04006	.03920	.03836	.03754	.03673	-1.7
-1.8	.03593	.03515	.03438	.03362	.03288	.03216	.03144	.03074	.03005	.02938	-1.8
-1.9	.02872	.02807	.02743	.02680	.02619	.02559	.02500	.02442	.02385	.02330	-1.9
-2.0	.02275	.02222	.02169	.02118	.02068	.02018	.01970	.01923	.01876	.01831	-2.0
-2.1	.01786	.01743	.01700	.01659	.01618	.01578	.01539	.01500	.01468	.01426	-2.1
-2.2	.01390	.01355	.01321	.01287	.01255	.01222	.01191	.01160	.01130	.01101	-2.2
-2.3	.01072	.01044	.01017	.009903	.009642	.009387	.009137	.008894	.008656	.008424	-2.3
-2.4	.008193	.007976	.007760	.007549	.007344	.007143	.006947	.006756	.006569	.006387	-2.4
-2.5	.006210	.006037	.005868	.005703	.005543	.005386	.005234	.005085	.004940	.004799	-2.5
-2.6	.004661	.004527	.004396	.004269	.004145	.004025	.003907	.003793	.003681	.003573	-2.6
-2.7	.003467	.003364	.003264	.003167	.003072	.002980	.002890	.002803	.002718	.002635	-2.7
-2.8	.002555	.002477	.002401	.002327	.002256	.002186	.002118	.002052	.001988	.001926	-2.8
-2.9	.001866	.001807	.001750	.001695	.001641	.001589	.001538	.001489	.001441	.001395	-2.9
-3.0	.001350	.001306	.001264	.001223	.001183	.001144	.001107	.001070	.001035	.001001	-3.0
-3.1	.0009676	.0009354	.0009043	.0008740	.0008447	.0008164	.0007888	.0007622	.0007364	.0007114	-3.1
-3.2	.0006871	.0006637	.0006410	.0006190	.0005976	.0005770	.0005571	.0005377	.0005190	.0005009	-3.2
-3.3	.0004834	.0004665	.0004501	.0004342	.0004189	.0004041	.0003897	.0003758	.0003624	.0003495	-3.3
-3.4	.0003369	.0003243	.0003121	.0003001	.0002890	.0002780	.0002671	.0002562	.0002457	.0002354	-3.4
-3.5	.0002252	.0002141	.0002035	.0001930	.0001826	.0001723	.0001621	.0001520	.0001421	.0001323	-3.5
-3.6	.0001226	.0001131	.0001037	.0000943	.0000850	.0000758	.0000666	.0000575	.0000485	.0000395	-3.6
-3.7	.0000306	.0000218	.0000131	.0000045	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-3.7
-3.8	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-3.8
-3.9	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-3.9
-4.0	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.0
-4.1	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.1
-4.2	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.2
-4.3	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.3
-4.4	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.4
-4.5	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.5
-4.6	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.6
-4.7	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.7
-4.8	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.8
-4.9	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	.0000000	-4.9

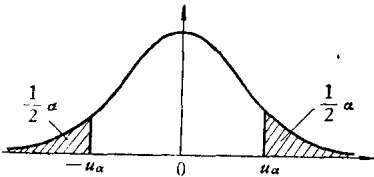
$$\Phi(u) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^u e^{-\frac{x^2}{2}} dx \quad (u \geq 0)$$



u	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	u
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359	0.0
0.1	.5393	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753	0.1
0.2	.5793	.5832	.5871	.5910	.5943	.5987	.6026	.6064	.6103	.6141	0.2
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517	0.3
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879	0.4
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224	0.5
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549	0.6
0.7	.7580	.7611	.7642	.7673	.7703	.7734	.7764	.7794	.7823	.7852	0.7
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133	0.8
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389	0.9
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621	1.0
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830	1.1
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9014	1.2
1.3	.9032	.9049	.9065	.9082	.9098	.9114	.9130	.9146	.9162	.9177	1.3
1.4	.9192	.9207	.9222	.9236	.9250	.9264	.9278	.9292	.9306	.9319	1.4
1.5	.9331	.9344	.9357	.9369	.9382	.9394	.9406	.9417	.9429	.9440	1.5
1.6	.9450	.9460	.9470	.9479	.9488	.9497	.9505	.9514	.9522	.9530	1.6
1.7	.9538	.9545	.9553	.9561	.9568	.9575	.9582	.9589	.9596	.9603	1.7
1.8	.9609	.9615	.9621	.9628	.9634	.9640	.9646	.9651	.9657	.9663	1.8
1.9	.9668	.9673	.9678	.9683	.9688	.9693	.9698	.9703	.9708	.9713	1.9
2.0	.9718	.9722	.9727	.9731	.9736	.9740	.9744	.9748	.9752	.9756	2.0
2.1	.9760	.9764	.9768	.9772	.9776	.9780	.9784	.9788	.9792	.9796	2.1
2.2	.9799	.9803	.9807	.9811	.9815	.9819	.9823	.9827	.9831	.9835	2.2
2.3	.9838	.9842	.9846	.9850	.9854	.9858	.9862	.9866	.9870	.9874	2.3
2.4	.9877	.9881	.9885	.9889	.9893	.9897	.9901	.9905	.9909	.9913	2.4
2.5	.9916	.9920	.9924	.9928	.9932	.9936	.9940	.9944	.9948	.9952	2.5
2.6	.9955	.9959	.9963	.9967	.9970	.9974	.9978	.9981	.9985	.9988	2.6
2.7	.9990	.9993	.9996	.9999	.9999	.9999	.9999	.9999	.9999	.9999	2.7
2.8	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	2.8
2.9	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	2.9
3.0	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.0
3.1	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.1
3.2	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.2
3.3	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.3
3.4	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.4
3.5	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.5
3.6	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.6
3.7	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.7
3.8	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.8
3.9	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	3.9
4.0	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.0
4.1	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.1
4.2	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.2
4.3	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.3
4.4	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.4
4.5	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.5
4.6	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.6
4.7	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.7
4.8	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.8
4.9	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	4.9

3. 正态分布的双侧分位数(u_α)表

$$\alpha = 1 - \frac{1}{\sqrt{2\pi}} \int_{-u_\alpha}^{u_\alpha} e^{-u^2/2} du$$

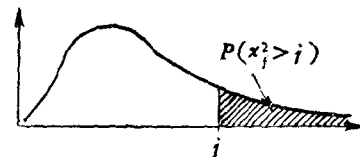


α	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	α
0.0	∞	2.575829	2.326348	2.170090	2.053749	1.959964	1.880794	1.811911	1.750686	1.695398	0.0
0.1	1.644854	1.598193	1.554774	1.514102	1.475791	1.439531	1.405072	1.372204	1.340755	1.310579	0.1
0.2	1.281552	1.253665	1.226528	1.200259	1.174987	1.150349	1.126391	1.103063	1.080319	1.058122	0.2
0.3	1.036433	1.015222	0.994458	0.974114	0.954165	0.934589	0.915365	0.896473	0.877896	0.859617	0.3
0.4	0.841621	0.823894	.806421	.789192	.772193	.755415	.738847	.722479	.706303	.690309	0.4
0.5	.674490	.658838	.643245	.628006	.612313	.597760	.582841	.568051	.553385	.538836	0.5
0.6	.524401	.510073	.495850	.481727	.467699	.452762	.439913	.426148	.412463	.398855	0.6
0.7	.385320	.371856	.358459	.345125	.331853	.318629	.305481	.292375	.279319	.266311	0.7
0.8	.253247	.240426	.227545	.214702	.201899	.189113	.176874	.163658	.150969	.138304	0.8
0.9	.125661	.113059	.100424	.087845	.075270	.062707	.050154	.037608	.025069	.012533	0.9
α	0.001	0.0001	0.00001			0.000001		0.0000001		0.00000001	α
u_α	2.29058	2.89059	4.41717			4.89164		5.92672		5.73073	u_α

4. χ^2 分布表

$j \backslash f$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.9178	0.6065	0.8013	0.9098	0.9626	0.9356	0.9948	0.9982	0.9994	0.9998	0.9999	1.0000	1.0000	1.0000	1.0000
2	.1574	.8679	.5724	.7538	.8491	.9197	.9598	.9810	.9915	.9963	.9985	0.9994	0.9998	0.9999	1.0000
3	.0833	.2231	.2916	.5578	.7000	.8088	.8850	.9244	.9643	.9814	.9907	.9955	.9979	.9991	0.9996
4	.0455	.1353	.2615	.4060	.5494	.6767	.7793	.8571	.9114	.9473	.9699	.9834	.9912	.9955	.9977
5	.0254	.0821	.1718	.2873	.4159	.5438	.6630	.7576	.8343	.8912	.9212	.9580	.9752	.9858	.9921
6	.0143	.0493	.1116	.1991	.3062	.4232	.5398	.6472	.7399	.8153	.8734	.9161	.9462	.9665	.9797
7	.0031	.0302	.0719	.1359	.2206	.3203	.4289	.5366	.6371	.7254	.7991	.8576	.9022	.9247	.9576
8	.0047	.0183	.0460	.0916	.1562	.2381	.3326	.4335	.5341	.6288	.7133	.7851	.8436	.8893	.9228
9	.0027	.0111	.0293	.0611	.1091	.1736	.2527	.3423	.4273	.5321	.6219	.7029	.7729	.8311	.8775
10	.0016	.0067	.0186	.0404	.0752	.1247	.1886	.2650	.3505	.4405	.5304	.6160	.6939	.7622	.8197
11	.0009	.0041	.0117	.0266	.0514	.0884	.1386	.2017	.2757	.3575	.4433	.5289	.6108	.6860	.7526
12	.0005	.0025	.0074	.0174	.0348	.0620	.1006	.1512	.2123	.2851	.3626	.4457	.5276	.6063	.6790
13	.0003	.0015	.0046	.0113	.0234	.0430	.0721	.1119	.1626	.2237	.2933	.3690	.4478	.5265	.6023
14	.0002	.0009	.0029	.0073	.0156	.0296	.0512	.0818	.1223	.1730	.2330	.3007	.3738	.4497	.5255
15	.0001	.0006	.0018	.0047	.0104	.0203	.0360	.0591	.0909	.1321	.1825	.2414	.3074	.3782	.4514
16	.0001	.0003	.0011	.0030	.0068	.0138	.0251	.0424	.0669	.0996	.1411	.1912	.2491	.3134	.3821
17	.0000	.0002	.0007	.0019	.0045	.0093	.0174	.0301	.0487	.0744	.1079	.1496	.1993	.2562	.3189
18		.0001	.0004	.0012	.0029	.0062	.0120	.0212	.0352	.0550	.0816	.1157	.1575	.2068	.2627
19		.0001	.0003	.0008	.0019	.0042	.0082	.0149	.0252	.0403	.0611	.0885	.1231	.1649	.2137
20		.0000	.0002	.0005	.0013	.0028	.0056	.0103	.0179	.0293	.0453	.0671	.0952	.1301	.1719
21			.0001	.0003	.0008	.0018	.0038	.0071	.0126	.0211	.0324	.0504	.0729	.1016	.1368
22			.0001	.0002	.0005	.0012	.0025	.0049	.0089	.0151	.0244	.0375	.0554	.0786	.1073
23			.0000	.0001	.0003	.0008	.0017	.0034	.0062	.0107	.0177	.0277	.0417	.0603	.0841
24				.0001	.0002	.0005	.0011	.0023	.0043	.0076	.0127	.0203	.0311	.0458	.0651
25				.0001	.0001	.0003	.0008	.0016	.0030	.0053	.0091	.0148	.0231	.0346	.0499
26				.0000	.0001	.0002	.0005	.0010	.0020	.0037	.0065	.0107	.0170	.0259	.0380
27					.0001	.0001	.0003	.0007	.0014	.0026	.0046	.0077	.0124	.0193	.0287
28					.0000	.0001	.0002	.0005	.0010	.0018	.0032	.0055	.0090	.0142	.0216
29						.0001	.0001	.0003	.0006	.0012	.0023	.0039	.0065	.0104	.0161
30						.0000	.0001	.0002	.0004	.0009	.0016	.0028	.0047	.0076	.0119

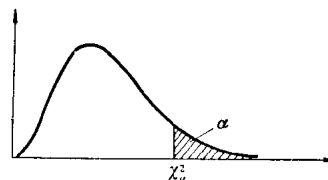
$$P(\chi^2_j > j) = \frac{1}{2^{f/2} \Gamma\left(\frac{f}{2}\right)} \int_j^\infty z^{\frac{f}{2}-1} e^{-\frac{z}{2}} dz$$



16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	$f \backslash j$
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	1.0000	1.0000	1
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	1.0000	1.0000	2
0.9998	0.9999	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	3
.9998	.9995	0.9998	0.9999	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	4
.9958	.9973	.9989	.9994	0.9997	0.9999	0.9999	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	5
.9831	.9932	.9962	.9979	.9989	.9994	.9997	0.9999	0.9999	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	6
.9733	.9835	.9901	.9942	.9967	.9981	.9990	.9995	.9997	0.9999	0.9999	1.0000	1.0000	1.0000	1.0000	7
.9439	.9665	.9786	.9857	.9919	.9951	.9972	.9984	.9991	.9995	.9997	0.9999	0.9999	1.0000	1.0000	8
.9134	.9403	.9597	.9735	.9829	.9902	.9933	.9950	.9976	.9986	.9992	.9995	.9997	0.9999	0.9999	9
.8663	.9026	.9319	.9529	.9682	.9789	.9868	.9912	.9945	.9967	.9980	.9988	.9993	.9996	.9998	10
.8095	.8566	.8944	.9238	.9462	.9623	.9747	.9832	.9890	.9929	.9955	.9972	.9983	.9990	.9994	11
.7440	.8001	.8472	.8856	.9181	.9496	.9754	.9905	.9979	.9986	.9912	.9943	.9964	.9977	.9986	12
.6728	.7362	.7916	.8386	.8774	.9086	.9322	.9520	.9681	.9765	.9840	.9892	.9929	.9954	.9970	13
.5937	.6671	.7291	.7827	.8305	.8696	.9015	.9269	.9466	.9617	.9730	.9813	.9872	.9914	.9948	14
.5246	.5955	.6620	.7226	.7764	.8230	.8622	.8946	.9208	.9414	.9572	.9694	.9784	.9850	.9898	15
.4530	.5223	.5925	.6573	.7186	.7696	.8159	.8558	.8881	.9148	.9362	.9529	.9658	.9755	.9827	16
.3856	.4544	.5231	.5899	.6530	.7111	.7634	.8093	.8487	.8818	.9091	.9311	.9486	.9622	.9726	17
.3229	.3888	.4557	.5224	.5874	.6490	.7060	.7575	.8030	.8424	.8758	.9035	.9261	.9443	.9585	18
.2637	.3285	.3918	.4503	.5018	.5551	.6053	.6512	.6920	.7271	.7664	.8000	.8281	.8513	.8700	19
.2202	.2742	.3223	.3646	.4019	.4343	.4619	.4849	.5033	.5171	.5264	.5316	.5338	.5329	.5290	20
.1785	.2263	.2794	.3268	.3671	.4009	.4287	.4511	.4687	.4826	.4920	.4972	.4994	.4985	.4946	21
.1432	.1847	.2320	.2843	.3405	.3995	.4599	.5203	.5793	.6357	.6887	.7374	.7813	.8202	.8540	22
.1127	.1492	.1906	.2373	.2888	.3440	.4017	.4608	.5193	.5776	.6329	.6850	.7330	.7765	.8153	23
.0895	.1194	.1550	.1962	.2424	.2931	.3472	.4028	.4616	.5194	.5760	.6303	.6815	.7289	.7720	24
.0698	.0947	.1249	.1605	.2014	.2472	.2971	.3503	.4058	.4624	.5190	.5745	.6278	.6782	.7250	25
.0540	.0745	.0993	.1302	.1658	.2064	.2517	.3009	.3522	.4076	.4621	.5186	.5720	.6255	.6751	26
.0415	.0581	.0790	.1047	.1353	.1709	.2112	.2560	.3045	.3559	.4092	.4628	.5182	.5717	.6223	27
.0316	.0449	.0621	.0824	.1094	.1402	.1757	.2158	.2600	.3079	.3585	.4110	.4644	.5179	.5704	28
.0239	.0345	.0484	.0660	.0878	.1140	.1449	.1803	.2201	.2639	.3111	.3609	.4125	.4651	.5176	29
.0180	.0262	.0374	.0518	.0699	.0920	.1185	.1494	.1848	.2242	.2676	.3142	.3622	.4140	.4657	30

5. χ^2 分布的上侧分位数 (χ^2_α) 表

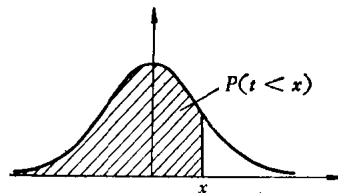
$$P(\chi^2_f > \chi^2_\alpha) = \alpha$$



$f \backslash \alpha$	0.99	0.98	0.95	0.90	0.80	0.70	0.50	0.30	0.20	0.10	0.05	0.02	0.01	0.001	$\alpha \backslash f$
1	0.00157	0.00628	0.01398	0.0158	0.0642	0.148	0.455	1.074	1.642	2.706	3.841	5.412	6.635	10.828	1
2	0.0201	0.0404	0.103	0.211	0.446	0.713	1.386	2.408	3.219	4.605	5.991	7.824	9.210	13.816	2
3	0.115	0.185	0.352	0.584	1.005	1.424	2.366	3.665	4.642	6.251	7.815	9.837	11.345	16.266	3
4	0.297	0.429	0.711	1.064	1.649	2.195	3.357	4.878	5.989	7.779	9.488	11.668	12.277	18.467	4
5	0.554	0.752	1.145	1.610	2.343	3.000	4.351	6.064	7.289	9.236	11.070	13.388	15.088	20.515	5
6	0.872	1.134	1.635	2.204	3.070	3.828	5.348	7.231	8.558	10.645	12.592	15.033	16.812	22.458	6
7	1.239	1.564	2.167	2.833	3.822	4.671	6.346	8.383	9.803	12.017	14.067	16.622	18.475	24.322	7
8	1.646	2.032	2.733	3.490	4.594	5.527	7.344	9.524	11.030	13.362	15.507	18.168	20.090	26.125	8
9	2.088	2.532	3.325	4.168	5.380	6.393	8.343	10.656	12.242	14.684	16.919	19.679	21.666	27.877	9
10	2.558	3.059	3.940	4.865	6.179	7.267	9.342	11.781	13.442	15.987	18.307	21.161	23.209	29.588	10
11	3.053	3.609	4.575	5.578	6.989	8.148	10.341	12.899	14.631	17.275	19.675	22.618	24.725	31.264	11
12	3.571	4.178	5.226	6.304	7.807	9.034	11.340	14.011	15.812	18.549	21.026	24.054	26.217	32.909	12
13	4.107	4.765	5.892	7.042	8.634	9.926	12.340	15.119	16.985	19.812	22.362	25.472	27.688	34.528	13
14	4.660	5.368	6.571	7.790	9.467	10.821	13.339	16.222	18.151	21.064	23.685	26.873	29.141	36.123	14
15	5.229	5.985	7.261	8.547	10.307	11.721	14.339	17.322	19.311	22.307	24.996	28.259	30.578	37.697	15
16	5.812	6.614	7.962	9.312	11.152	12.624	15.338	18.418	20.465	23.542	26.296	29.633	32.000	39.252	16
17	6.408	7.255	8.672	10.085	12.002	13.531	16.338	19.511	21.615	24.769	27.587	30.995	33.409	40.790	17
18	7.015	7.906	9.390	10.865	12.857	14.440	17.338	20.601	22.760	25.989	28.869	32.846	34.805	42.312	18
19	7.633	8.567	10.117	11.651	13.716	15.352	18.338	21.689	23.900	27.204	30.144	33.687	36.191	43.820	19
20	8.260	9.237	10.851	12.443	14.578	16.266	19.337	22.775	25.038	28.412	31.410	35.020	37.566	45.315	20
21	8.897	9.915	11.591	13.240	15.445	17.182	20.337	23.858	26.171	29.615	32.671	36.343	38.932	46.797	21
22	9.542	10.600	12.338	14.041	16.314	18.101	21.337	24.939	27.301	30.813	33.924	37.659	40.289	48.268	22
23	10.196	11.293	13.091	14.848	17.187	19.021	22.337	26.018	28.429	32.007	35.172	38.968	41.638	49.728	23
24	10.856	11.992	13.848	15.659	18.062	19.943	23.337	27.096	29.553	33.196	36.415	40.270	42.980	51.179	24
25	11.524	12.697	14.611	16.473	18.940	20.867	24.337	28.172	30.675	34.382	37.652	41.566	44.314	52.618	25
26	12.198	13.409	15.379	17.292	19.820	21.792	25.336	29.246	31.795	35.563	38.885	42.856	45.642	54.052	26
27	12.879	14.125	16.151	18.114	20.703	22.719	26.336	30.319	32.912	36.741	40.113	44.140	46.963	55.476	27
28	13.565	14.847	16.928	18.939	21.588	23.647	27.336	31.391	34.027	37.916	41.337	45.419	48.278	56.893	28
29	14.256	15.574	17.708	19.768	22.475	24.577	28.336	32.461	35.139	39.087	42.557	46.693	49.588	58.301	29
30	14.953	16.306	18.493	20.599	23.364	25.508	29.336	33.530	36.250	40.256	43.773	47.962	50.892	59.703	30

6. t 分 布 表

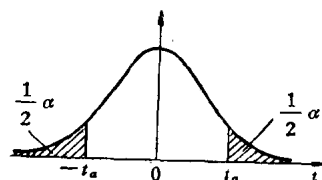
$$P(t < x) = \frac{1}{\sqrt{f} B\left(\frac{1}{2}, \frac{f}{2}\right)} \int_{-\infty}^x \frac{1}{(1+t^2/f)^{\frac{f+1}{2}}} dt$$



f x	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	∞	f x
0.0	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.0
0.1	.532	.535	.537	.537	.538	.538	.538	.539	.539	.539	.539	.539	.539	.539	.539	.539	.539	.539	.539	.540	0.1
0.2	.563	.570	.573	.574	.575	.576	.576	.577	.577	.577	.577	.578	.578	.578	.578	.578	.578	.578	.578	.579	0.2
0.3	.593	.604	.608	.610	.612	.613	.614	.614	.615	.615	.615	.615	.616	.616	.616	.616	.616	.616	.616	.618	0.3
0.4	.621	.639	.642	.645	.647	.648	.650	.651	.651	.652	.652	.652	.652	.652	.653	.653	.653	.653	.653	.655	0.4
0.5	.648	.667	.674	.678	.681	.683	.684	.685	.686	.686	.686	.687	.687	.687	.688	.688	.688	.688	.688	.689	0.5
0.6	.672	.695	.705	.710	.713	.715	.716	.717	.718	.719	.720	.720	.721	.721	.721	.722	.722	.722	.722	.726	0.6
0.7	.694	.722	.733	.739	.742	.745	.747	.748	.749	.750	.751	.751	.752	.752	.753	.753	.753	.754	.754	.758	0.7
0.8	.715	.746	.759	.766	.770	.773	.775	.777	.778	.779	.780	.780	.781	.781	.782	.782	.783	.783	.783	.788	0.8
0.9	.733	.768	.783	.790	.795	.799	.801	.803	.804	.805	.806	.807	.808	.808	.809	.809	.810	.810	.810	.816	0.9
1.0	.750	.789	.804	.813	.818	.822	.825	.827	.828	.830	.831	.832	.832	.833	.833	.834	.834	.835	.835	.841	1.0
1.1	.765	.807	.824	.834	.839	.843	.846	.848	.850	.851	.853	.854	.854	.855	.856	.856	.857	.857	.857	.864	1.1
1.2	.779	.823	.842	.852	.858	.862	.865	.868	.870	.871	.872	.873	.874	.875	.876	.876	.877	.877	.878	.885	1.2
1.3	.791	.838	.858	.868	.875	.879	.883	.885	.887	.889	.890	.891	.892	.893	.893	.894	.894	.895	.895	.903	1.3
1.4	.803	.852	.872	.883	.890	.894	.898	.900	.902	.904	.905	.907	.908	.908	.909	.910	.910	.911	.911	.919	1.4
1.5	.813	.864	.885	.896	.903	.908	.911	.914	.916	.918	.919	.920	.921	.922	.923	.923	.924	.924	.925	.933	1.5
1.6	.822	.875	.896	.908	.915	.920	.923	.926	.928	.930	.931	.932	.933	.934	.935	.935	.936	.936	.937	.945	1.6
1.7	.831	.884	.906	.918	.925	.930	.934	.936	.938	.940	.941	.943	.944	.945	.945	.946	.946	.947	.947	.955	1.7
1.8	.839	.893	.915	.927	.934	.939	.943	.945	.947	.949	.950	.952	.952	.953	.954	.955	.955	.956	.956	.964	1.8
1.9	.846	.901	.923	.935	.942	.947	.950	.953	.955	.957	.958	.959	.960	.961	.962	.962	.963	.963	.964	.971	1.9
2.0	.852	.908	.930	.942	.949	.954	.957	.960	.962	.963	.965	.966	.967	.967	.968	.969	.969	.970	.970	.977	2.0
2.2	.864	.921	.942	.954	.960	.965	.968	.970	.972	.974	.975	.976	.977	.977	.978	.979	.979	.979	.980	.986	2.2
2.4	.874	.931	.952	.963	.969	.973	.976	.978	.980	.981	.982	.983	.984	.985	.985	.986	.986	.986	.987	.992	2.4
2.6	.883	.938	.960	.970	.976	.980	.982	.984	.986	.987	.988	.988	.989	.990	.990	.990	.991	.991	.991	.995	2.6
2.8	.891	.946	.966	.976	.981	.984	.987	.988	.990	.991	.991	.992	.992	.993	.993	.994	.994	.994	.994	.997	2.8
3.0	.898	.952	.971	.980	.985	.988	.990	.992	.993	.993	.994	.994	.995	.995	.996	.996	.996	.996	.996	.999	3.0
3.2	.904	.957	.975	.984	.988	.991	.992	.994	.995	.995	.996	.996	.997	.997	.997	.997	.997	.997	.998	.999	3.2
3.4	.909	.962	.979	.986	.990	.993	.994	.995	.996	.997	.997	.997	.998	.998	.998	.998	.998	.998	.998	1.000	3.4
3.6	.914	.965	.982	.989	.992	.994	.996	.996	.997	.998	.998	.998	.998	.999	.999	.999	.999	.999	.999	.999	3.6
3.8	.918	.969	.984	.990	.994	.996	.997	.997	.998	.998	.999	.999	.999	.999	.999	.999	.999	.999	.999	.999	3.8
4.0	.922	.971	.986	.992	.995	.996	.997	.998	.998	.999	.999	.999	.999	.999	.999	.999	1.000	1.000	1.000	1.000	4.0
4.2	.926	.974	.988	.993	.996	.997	.998	.998	.999	.999	.999	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	4.2
4.4	.929	.976	.989	.994	.996	.998	.998	.999	.999	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	4.4
4.6	.932	.978	.990	.995	.997	.998	.999	.999	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	4.6
4.8	.935	.980	.991	.996	.998	.998	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	4.8
5.0	.937	.981	.992	.996	.998	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	5.0
5.2	.940	.982	.993	.997	.998	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	5.2
5.4	.942	.984	.994	.997	.998	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	5.4
5.6	.944	.985	.994	.998	.999	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	5.6
5.8	.946	.986	.995	.998	.999	.999	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	5.8
6.0	.947	.987	.995	.998	.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	6.0

7. t 分布的双侧分位数 (t_α) 表

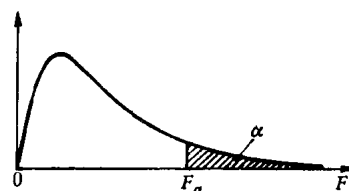
$$P(|t| > t_\alpha) = \alpha$$



$f \backslash \alpha$	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.05	0.02	0.01	0.001	$\alpha \backslash f$
1	0.153	0.325	0.510	0.727	1.000	1.376	1.963	3.073	6.314	12.706	31.821	63.657	636.619	1
2	.142	.289	.445	.617	0.816	1.061	1.386	1.836	2.920	4.303	6.965	9.925	31.598	2
3	.137	.277	.424	.584	.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	12.924	3
4	.134	.271	.414	.569	.741	.941	1.190	1.533	2.132	2.776	3.747	4.604	8.610	4
5	.132	.267	.408	.559	.727	.920	1.156	1.476	2.015	2.571	3.365	4.032	6.859	5
6	.131	.265	.404	.553	.718	.906	1.134	1.440	1.943	2.447	3.143	3.707	5.959	6
7	.130	.263	.402	.549	.711	.896	1.119	1.415	1.895	2.365	2.998	3.499	5.405	7
8	.130	.262	.399	.546	.706	.889	1.108	1.397	1.860	2.306	2.896	3.355	5.041	8
9	.129	.261	.398	.543	.703	.883	1.100	1.383	1.833	2.262	2.821	3.250	4.781	9
10	.129	.260	.397	.542	.700	.879	1.093	1.372	1.812	2.228	2.764	3.169	4.587	10
11	.129	.260	.396	.540	.697	.876	1.088	1.363	1.796	2.201	2.718	3.106	4.437	11
12	.128	.259	.395	.539	.695	.873	1.083	1.356	1.782	2.179	2.681	3.055	4.318	12
13	.128	.259	.394	.538	.694	.870	1.079	1.350	1.771	2.160	2.650	3.012	4.221	13
14	.128	.258	.393	.537	.692	.868	1.076	1.345	1.761	2.145	2.624	2.977	4.140	14
15	.128	.258	.393	.536	.691	.866	1.074	1.341	1.753	2.131	2.602	2.947	4.073	15
16	.128	.258	.392	.535	.690	.865	1.071	1.337	1.746	2.120	2.583	2.921	4.015	16
17	.128	.257	.392	.534	.689	.863	1.069	1.333	1.740	2.110	2.567	2.898	3.965	17
18	.127	.257	.392	.534	.688	.862	1.067	1.330	1.734	2.101	2.552	2.878	3.922	18
19	.127	.257	.391	.533	.688	.861	1.066	1.328	1.729	2.093	2.539	2.861	3.883	19
20	.127	.257	.391	.533	.687	.860	1.064	1.325	1.725	2.086	2.528	2.845	3.850	20
21	.127	.257	.391	.532	.686	.859	1.063	1.323	1.721	2.080	2.518	2.831	3.819	21
22	.127	.256	.390	.532	.686	.858	1.061	1.321	1.717	2.074	2.508	2.819	3.792	22
23	.127	.256	.390	.532	.685	.853	1.060	1.319	1.714	2.069	2.500	2.807	3.767	23
24	.127	.256	.390	.531	.685	.857	1.059	1.313	1.711	2.064	2.492	2.797	3.745	24
25	.127	.256	.390	.531	.684	.856	1.058	1.316	1.708	2.060	2.485	2.787	3.725	25
26	.127	.256	.390	.531	.684	.856	1.058	1.315	1.706	2.056	2.479	2.779	3.707	26
27	.127	.256	.389	.531	.684	.855	1.057	1.314	1.703	2.052	2.473	2.771	3.690	27
28	.127	.256	.389	.530	.683	.855	1.056	1.313	1.701	2.048	2.467	2.763	3.674	28
29	.127	.256	.389	.530	.683	.854	1.055	1.311	1.699	2.045	2.462	2.756	3.659	29
30	.127	.256	.389	.530	.683	.854	1.055	1.310	1.697	2.042	2.457	2.750	3.646	30
40	.126	.255	.388	.529	.681	.851	1.050	1.303	1.684	2.021	2.423	2.704	3.551	40
60	.126	.254	.387	.527	.679	.848	1.046	1.296	1.671	2.000	2.390	2.660	3.460	60
120	.126	.254	.386	.526	.677	.845	1.041	1.289	1.658	1.980	2.358	2.617	3.373	120
∞	.126	.253	.385	.524	.674	.842	1.036	1.282	1.645	1.960	2.326	2.576	3.291	∞

8. F 检验的临界值 (F_{α}) 表

$$P(F > F_{\alpha}) = \alpha$$



$\alpha = 0.10$

$f_2 \backslash f_1$	1	2	3	4	5	6	7	8	9	10	15	20	30	50	100	200	500	∞	$f_1 \backslash f_2$
1	39.9	49.5	53.6	55.8	57.2	53.2	53.9	59.4	59.9	60.2	61.2	61.7	62.3	62.7	63.0	63.2	63.3	63.3	1
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39	9.42	9.44	9.46	9.47	9.48	9.49	9.49	9.49	2
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23	5.20	5.18	5.17	5.15	5.14	5.14	5.14	5.13	3
4	4.54	4.32	4.19	4.11	4.05	4.01	3.99	3.95	3.94	3.92	3.87	3.84	3.82	3.80	3.78	3.77	3.76	3.76	4
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30	3.24	3.21	3.17	3.15	3.13	3.12	3.11	3.10	5
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94	2.87	2.84	2.80	2.77	2.75	2.73	2.73	2.72	6
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70	2.63	2.59	2.56	2.52	2.50	2.48	2.48	2.47	7
8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54	2.46	2.42	2.38	2.35	2.32	2.31	2.30	2.29	8
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42	2.34	2.30	2.25	2.22	2.19	2.17	2.17	2.16	9
10	3.28	2.92	2.73	2.61	2.52	2.46	2.41	2.33	2.35	2.32	2.24	2.20	2.16	2.12	2.09	2.07	2.06	2.06	10
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25	2.17	2.12	2.08	2.04	2.00	1.99	1.93	1.97	11
12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19	2.10	2.06	2.01	1.97	1.94	1.92	1.91	1.90	12
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14	2.05	2.01	1.96	1.92	1.83	1.86	1.85	1.85	13
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10	2.01	1.96	1.91	1.87	1.83	1.82	1.80	1.80	14
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06	1.97	1.92	1.87	1.83	1.79	1.77	1.76	1.76	15
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03	1.94	1.89	1.84	1.79	1.76	1.74	1.73	1.72	16
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00	1.91	1.86	1.81	1.76	1.73	1.71	1.69	1.69	17
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98	1.89	1.84	1.78	1.74	1.70	1.68	1.67	1.66	18
19	2.99	2.61	2.40	2.27	2.18	2.11	2.06	2.02	1.98	1.96	1.86	1.81	1.76	1.71	1.67	1.65	1.64	1.63	19
20	2.97	2.59	2.33	2.25	2.16	2.09	2.04	2.00	1.96	1.94	1.84	1.79	1.74	1.69	1.65	1.63	1.62	1.61	20
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90	1.81	1.76	1.70	1.65	1.61	1.59	1.58	1.57	22
24	2.93	2.54	2.33	2.19	2.10	2.04	1.93	1.94	1.91	1.88	1.78	1.73	1.67	1.62	1.58	1.56	1.54	1.53	24
26	2.91	2.52	2.31	2.17	2.03	2.01	1.96	1.92	1.83	1.86	1.76	1.71	1.65	1.59	1.55	1.53	1.51	1.50	26
28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87	1.84	1.74	1.69	1.63	1.57	1.53	1.50	1.49	1.43	28
30	2.88	2.49	2.28	2.14	2.05	1.93	1.93	1.83	1.85	1.82	1.72	1.67	1.61	1.55	1.51	1.48	1.47	1.46	30
40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79	1.76	1.63	1.61	1.54	1.48	1.43	1.41	1.39	1.38	40
50	2.81	2.41	2.20	2.06	1.97	1.90	1.84	1.80	1.76	1.73	1.63	1.57	1.50	1.44	1.39	1.36	1.34	1.33	50
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71	1.60	1.54	1.48	1.41	1.36	1.33	1.31	1.29	60
80	2.77	2.37	2.15	2.02	1.92	1.85	1.79	1.75	1.71	1.63	1.57	1.51	1.44	1.38	1.32	1.28	1.26	1.24	80
100	2.76	2.36	2.14	2.00	1.91	1.83	1.78	1.73	1.70	1.66	1.56	1.49	1.42	1.35	1.29	1.26	1.23	1.21	100
200	2.73	2.33	2.11	1.97	1.88	1.80	1.75	1.70	1.63	1.63	1.52	1.46	1.38	1.31	1.24	1.20	1.17	1.14	200
500	2.72	2.31	2.10	1.93	1.86	1.79	1.73	1.63	1.64	1.61	1.50	1.44	1.36	1.23	1.21	1.16	1.12	1.09	500
∞	2.71	2.30	2.03	1.94	1.85	1.77	1.72	1.67	1.63	1.60	1.49	1.42	1.34	1.26	1.18	1.13	1.08	1.00	∞

$\alpha=0.05$

$f_1 \backslash f_2$	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	$f_1 \backslash f_2$
1	161	200	216	225	230	234	237	239	241	242	244	245	246	247	248	1
2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	2
3	10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.71	8.69	8.67	8.66	3
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.87	5.84	5.82	5.80	4
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.64	4.60	4.58	4.56	5
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.96	3.92	3.90	3.87	6
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.53	3.49	3.47	3.44	7
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.24	3.20	3.17	3.15	8
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.03	2.99	2.96	2.94	9
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.93	2.91	2.86	2.83	2.80	2.77	10
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.74	2.70	2.67	2.65	11
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.64	2.60	2.57	2.54	12
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.55	2.51	2.48	2.46	13
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.48	2.44	2.41	2.39	14
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.42	2.38	2.35	2.33	15
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.37	2.33	2.30	2.28	16
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.33	2.29	2.26	2.23	17
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.29	2.25	2.22	2.19	18
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.26	2.21	2.18	2.16	19
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.22	2.18	2.15	2.12	20
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.20	2.16	2.12	2.10	21
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.17	2.13	2.10	2.07	22
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.15	2.11	2.07	2.05	23
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.13	2.09	2.05	2.03	24
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.11	2.07	2.04	2.01	25
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.09	2.05	2.02	1.99	26
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.26	2.20	2.13	2.08	2.04	2.00	1.97	27
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.06	2.02	1.99	1.96	28
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.05	2.01	1.97	1.94	29
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.04	1.99	1.96	1.93	30
32	4.15	3.29	2.90	2.67	2.51	2.40	2.31	2.24	2.19	2.14	2.07	2.01	1.97	1.94	1.91	32
34	4.13	3.28	2.88	2.65	2.49	2.38	2.29	2.23	2.17	2.12	2.05	1.99	1.95	1.92	1.89	34
36	4.11	3.26	2.87	2.63	2.43	2.36	2.28	2.21	2.15	2.11	2.03	1.98	1.93	1.90	1.87	36
38	4.10	3.24	2.85	2.62	2.46	2.35	2.26	2.19	2.14	2.09	2.02	1.96	1.92	1.88	1.85	38
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.95	1.90	1.87	1.84	40
42	4.07	3.22	2.83	2.59	2.44	2.32	2.24	2.17	2.11	2.06	1.99	1.93	1.89	1.86	1.83	42
44	4.06	3.21	2.82	2.58	2.43	2.31	2.23	2.16	2.10	2.05	1.98	1.92	1.88	1.84	1.81	44
46	4.05	3.20	2.81	2.57	2.42	2.30	2.22	2.15	2.09	2.04	1.97	1.91	1.87	1.83	1.80	46
48	4.04	3.19	2.80	2.57	2.41	2.29	2.21	2.14	2.08	2.03	1.96	1.90	1.86	1.82	1.79	48
50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03	1.95	1.89	1.85	1.81	1.78	50
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.86	1.82	1.78	1.75	60
80	3.96	3.11	2.72	2.49	2.33	2.21	2.13	2.06	2.00	1.95	1.88	1.82	1.77	1.73	1.70	80
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.85	1.79	1.75	1.71	1.68	100
125	3.92	3.07	2.68	2.44	2.29	2.17	2.08	2.01	1.96	1.91	1.83	1.77	1.72	1.69	1.65	125
150	3.90	3.06	2.66	2.43	2.27	2.16	2.07	2.00	1.94	1.89	1.82	1.76	1.71	1.67	1.64	150
200	3.89	3.04	2.65	2.42	2.26	2.14	2.06	1.98	1.93	1.88	1.80	1.74	1.69	1.66	1.62	200
300	3.87	3.03	2.63	2.40	2.24	2.13	2.04	1.97	1.91	1.86	1.78	1.72	1.68	1.64	1.61	300
500	3.86	3.01	2.62	2.39	2.23	2.12	2.03	1.96	1.90	1.85	1.77	1.71	1.66	1.62	1.59	500
1000	3.85	3.00	2.61	2.38	2.22	2.11	2.02	1.95	1.89	1.84	1.76	1.70	1.65	1.61	1.58	1000
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.69	1.64	1.60	1.57	∞

$\alpha=0.05$

$f_1 \backslash f_2$	22	24	26	28	30	35	40	45	50	60	80	100	200	500	∞	$f_1 \backslash f_2$
1	249	249	249	250	250	251	251	251	252	252	252	253	254	254	254	1
2	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	2
3	8.65	8.64	8.63	8.62	8.62	8.60	8.59	8.59	8.58	8.57	8.56	8.55	8.54	8.53	8.53	3
4	5.79	5.77	5.76	5.75	5.75	5.73	5.72	5.71	5.70	5.69	5.67	5.66	5.65	5.64	5.63	4
5	4.54	4.53	4.52	4.50	4.50	4.48	4.46	4.45	4.44	4.43	4.41	4.41	4.39	4.37	4.37	5
6	3.86	3.84	3.83	3.82	3.81	3.79	3.77	3.76	3.75	3.74	3.72	3.71	3.69	3.68	3.67	6
7	3.43	3.41	3.40	3.39	3.38	3.36	3.34	3.33	3.32	3.30	3.29	3.27	3.25	3.24	3.23	7
8	3.13	3.12	3.10	3.09	3.08	3.06	3.04	3.03	3.02	3.01	2.99	2.97	2.95	2.94	2.93	8
9	2.92	2.90	2.89	2.87	2.86	2.84	2.83	2.81	2.80	2.79	2.77	2.76	2.73	2.72	2.71	9
10	2.75	2.74	2.72	2.71	2.70	2.68	2.66	2.65	2.64	2.62	2.60	2.59	2.56	2.55	2.54	10
11	2.63	2.61	2.59	2.58	2.57	2.55	2.53	2.52	2.51	2.49	2.47	2.46	2.43	2.42	2.40	11
12	2.52	2.51	2.49	2.48	2.47	2.44	2.43	2.41	2.40	2.38	2.36	2.35	2.32	2.31	2.30	12
13	2.44	2.42	2.41	2.39	2.38	2.36	2.34	2.33	2.31	2.30	2.27	2.26	2.23	2.22	2.21	13
14	2.37	2.35	2.33	2.32	2.31	2.28	2.27	2.25	2.24	2.22	2.20	2.19	2.16	2.14	2.13	14
15	2.31	2.29	2.27	2.26	2.25	2.22	2.20	2.19	2.18	2.16	2.14	2.12	2.10	2.08	2.07	15
16	2.25	2.24	2.22	2.21	2.19	2.17	2.15	2.14	2.12	2.11	2.08	2.07	2.04	2.02	2.01	16
17	2.21	2.19	2.17	2.16	2.15	2.12	2.10	2.09	2.08	2.06	2.03	2.02	1.99	1.97	1.96	17
18	2.17	2.15	2.13	2.12	2.11	2.08	2.06	2.05	2.04	2.02	1.99	1.98	1.95	1.93	1.92	18
19	2.13	2.11	2.10	2.08	2.07	2.05	2.03	2.01	2.00	1.98	1.96	1.94	1.91	1.89	1.88	19
20	2.10	2.08	2.07	2.05	2.04	2.01	1.99	1.98	1.97	1.95	1.92	1.91	1.88	1.86	1.84	20
21	2.07	2.05	2.04	2.02	2.01	1.98	1.96	1.95	1.94	1.92	1.89	1.88	1.84	1.82	1.81	21
22	2.05	2.03	2.01	2.00	1.98	1.96	1.94	1.92	1.91	1.89	1.86	1.85	1.82	1.80	1.78	22
23	2.02	2.00	1.99	1.97	1.96	1.93	1.91	1.90	1.88	1.86	1.84	1.82	1.79	1.77	1.76	23
24	2.00	1.98	1.97	1.95	1.94	1.91	1.89	1.88	1.86	1.84	1.82	1.80	1.77	1.75	1.73	24
25	1.98	1.96	1.95	1.93	1.92	1.89	1.87	1.86	1.84	1.82	1.80	1.78	1.75	1.73	1.71	25
26	1.97	1.95	1.93	1.91	1.90	1.87	1.85	1.84	1.82	1.80	1.78	1.76	1.73	1.71	1.69	26
27	1.95	1.93	1.91	1.90	1.88	1.86	1.84	1.82	1.81	1.79	1.76	1.74	1.71	1.69	1.67	27
28	1.93	1.91	1.90	1.88	1.87	1.84	1.82	1.80	1.79	1.77	1.74	1.73	1.69	1.67	1.65	28
29	1.92	1.90	1.88	1.87	1.85	1.83	1.81	1.79	1.77	1.75	1.73	1.71	1.67	1.65	1.64	29
30	1.91	1.89	1.87	1.85	1.84	1.81	1.79	1.77	1.76	1.74	1.71	1.70	1.66	1.64	1.62	30
32	1.88	1.86	1.85	1.83	1.82	1.79	1.77	1.75	1.74	1.71	1.69	1.67	1.63	1.61	1.59	32
34	1.86	1.84	1.82	1.80	1.80	1.77	1.75	1.73	1.71	1.69	1.66	1.65	1.61	1.59	1.57	34
36	1.85	1.82	1.81	1.79	1.78	1.75	1.73	1.71	1.69	1.67	1.64	1.62	1.59	1.56	1.55	36
38	1.83	1.81	1.79	1.77	1.76	1.73	1.71	1.69	1.68	1.65	1.62	1.61	1.57	1.54	1.53	38
40	1.81	1.79	1.77	1.76	1.74	1.72	1.69	1.67	1.66	1.64	1.61	1.59	1.55	1.53	1.51	40
42	1.80	1.78	1.76	1.74	1.73	1.70	1.68	1.66	1.65	1.62	1.59	1.57	1.53	1.51	1.49	42
44	1.79	1.77	1.75	1.73	1.72	1.69	1.67	1.65	1.63	1.61	1.58	1.56	1.52	1.49	1.48	44
46	1.78	1.76	1.74	1.72	1.71	1.68	1.65	1.64	1.62	1.60	1.57	1.55	1.51	1.48	1.46	46
48	1.77	1.75	1.73	1.71	1.70	1.67	1.64	1.62	1.61	1.59	1.56	1.54	1.49	1.47	1.45	48
50	1.76	1.74	1.72	1.70	1.69	1.66	1.63	1.61	1.60	1.58	1.54	1.52	1.48	1.46	1.44	50
60	1.72	1.70	1.68	1.66	1.65	1.62	1.59	1.57	1.56	1.53	1.50	1.48	1.44	1.41	1.39	60
80	1.63	1.65	1.63	1.62	1.60	1.57	1.54	1.52	1.51	1.48	1.45	1.43	1.38	1.35	1.32	80
100	1.65	1.63	1.61	1.59	1.57	1.54	1.52	1.49	1.48	1.45	1.41	1.39	1.34	1.31	1.28	100
125	1.63	1.60	1.58	1.57	1.55	1.52	1.49	1.47	1.45	1.42	1.39	1.36	1.31	1.27	1.25	125
150	1.61	1.59	1.57	1.55	1.53	1.50	1.48	1.45	1.44	1.41	1.37	1.34	1.29	1.25	1.22	150
200	1.60	1.57	1.55	1.53	1.52	1.48	1.46	1.43	1.41	1.39	1.35	1.32	1.26	1.22	1.19	200
300	1.58	1.55	1.53	1.51	1.50	1.46	1.43	1.41	1.39	1.36	1.32	1.30	1.23	1.19	1.15	300
500	1.56	1.54	1.52	1.50	1.48	1.45	1.42	1.40	1.38	1.34	1.30	1.28	1.21	1.16	1.11	500
1000	1.55	1.53	1.51	1.49	1.47	1.44	1.41	1.38	1.36	1.33	1.29	1.26	1.19	1.13	1.08	1000
∞	1.54	1.52	1.50	1.48	1.46	1.42	1.39	1.37	1.35	1.32	1.27	1.24	1.17	1.11	1.00	∞