

Statistical Tables

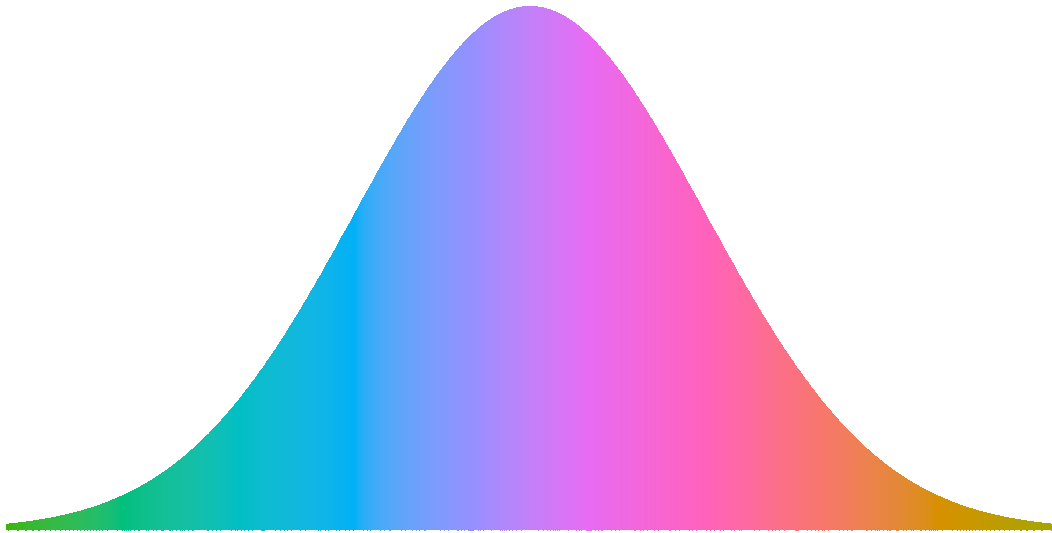
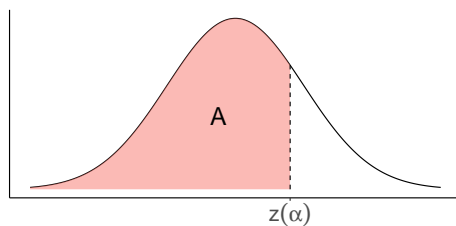


Table 1: Cumulative probabilities of the standard normal distribution.

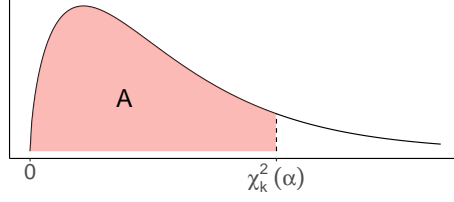
Each table entry is the area $A = 1 - \alpha$ under the standard normal curve from $-\infty$ to $z(\alpha)$.



	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998

Table 2: Percentiles of the χ^2 distribution.

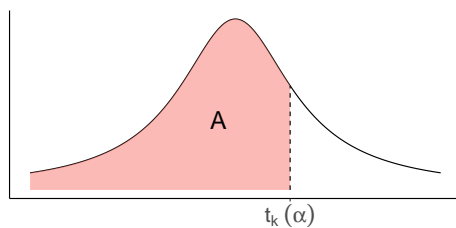
Each table entry is $\chi_k^2(\alpha)$, where $P(X < \chi_k^2(\alpha)) = A = 1 - \alpha$ with $X \sim \chi_k^2$.



k	A									
	0.005	0.010	0.025	0.050	0.100	0.900	0.950	0.975	0.990	0.995
1	0.0 ⁴ 393	0.0 ³ 157	0.0 ³ 982	0.0 ² 393	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	39.087	42.557	45.722	49.588	52.336
30	13.787	14.953	16.791	18.493	20.599	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	95.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169

Table 3: Percentiles of Student's t -distribution.

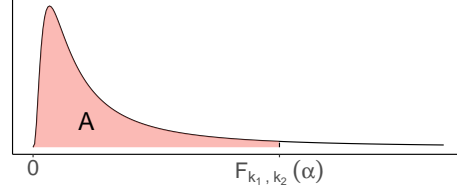
Each table entry is $t_k(\alpha)$, where $P(X < t_k(\alpha)) = A = 1 - \alpha$ with $X \sim t_k$.



k	A											
	0.60	0.70	0.80	0.85	0.90	0.95	0.975	0.990	0.9925	0.9950	0.9975	0.9995
1	0.325	0.727	1.376	1.963	3.078	6.314	12.706	31.821	42.433	63.657	127.321	636.619
2	0.289	0.617	1.061	1.386	1.886	2.920	4.303	6.965	8.073	9.925	14.089	31.599
3	0.277	0.584	0.978	1.250	1.638	2.353	3.182	4.541	5.047	5.841	7.453	12.924
4	0.271	0.569	0.941	1.190	1.533	2.132	2.776	3.747	4.088	4.604	5.598	8.610
5	0.267	0.559	0.920	1.156	1.476	2.015	2.571	3.365	3.634	4.032	4.773	6.869
6	0.265	0.553	0.906	1.134	1.440	1.943	2.447	3.143	3.372	3.707	4.317	5.959
7	0.263	0.549	0.896	1.119	1.415	1.895	2.365	2.998	3.203	3.499	4.029	5.408
8	0.262	0.546	0.889	1.108	1.397	1.860	2.306	2.896	3.085	3.355	3.833	5.041
9	0.261	0.543	0.883	1.100	1.383	1.833	2.262	2.821	2.998	3.250	3.690	4.781
10	0.260	0.542	0.879	1.093	1.372	1.812	2.228	2.764	2.932	3.169	3.581	4.587
11	0.260	0.540	0.876	1.088	1.363	1.796	2.201	2.718	2.879	3.106	3.497	4.437
12	0.259	0.539	0.873	1.083	1.356	1.782	2.179	2.681	2.836	3.055	3.428	4.318
13	0.259	0.538	0.870	1.079	1.350	1.771	2.160	2.650	2.801	3.012	3.372	4.221
14	0.258	0.537	0.868	1.076	1.345	1.761	2.145	2.624	2.771	2.977	3.326	4.140
15	0.258	0.536	0.866	1.074	1.341	1.753	2.131	2.602	2.746	2.947	3.286	4.073
16	0.258	0.535	0.865	1.071	1.337	1.746	2.120	2.583	2.724	2.921	3.252	4.015
17	0.257	0.534	0.863	1.069	1.333	1.740	2.110	2.567	2.706	2.898	3.222	3.965
18	0.257	0.534	0.862	1.067	1.330	1.734	2.101	2.552	2.689	2.878	3.197	3.922
19	0.257	0.533	0.861	1.066	1.328	1.729	2.093	2.539	2.674	2.861	3.174	3.883
20	0.257	0.533	0.860	1.064	1.325	1.725	2.086	2.528	2.661	2.845	3.153	3.850
21	0.257	0.532	0.859	1.063	1.323	1.721	2.080	2.518	2.649	2.831	3.135	3.819
22	0.256	0.532	0.858	1.061	1.321	1.717	2.074	2.508	2.639	2.819	3.119	3.792
23	0.256	0.532	0.858	1.060	1.319	1.714	2.069	2.500	2.629	2.807	3.104	3.768
24	0.256	0.531	0.857	1.059	1.318	1.711	2.064	2.492	2.620	2.797	3.091	3.745
25	0.256	0.531	0.856	1.058	1.316	1.708	2.060	2.485	2.612	2.787	3.078	3.725
26	0.256	0.531	0.856	1.058	1.315	1.706	2.056	2.479	2.605	2.779	3.067	3.707
27	0.256	0.531	0.855	1.057	1.314	1.703	2.052	2.473	2.598	2.771	3.057	3.690
28	0.256	0.530	0.855	1.056	1.313	1.701	2.048	2.467	2.592	2.763	3.047	3.674
29	0.256	0.530	0.854	1.055	1.311	1.699	2.045	2.462	2.586	2.756	3.038	3.659
30	0.256	0.530	0.854	1.055	1.310	1.697	2.042	2.457	2.581	2.750	3.030	3.646
40	0.255	0.529	0.851	1.050	1.303	1.684	2.021	2.423	2.542	2.704	2.971	3.551
60	0.254	0.527	0.848	1.045	1.296	1.671	2.000	2.390	2.504	2.660	2.915	3.460
120	0.254	0.526	0.845	1.041	1.289	1.658	1.980	2.358	2.468	2.617	2.860	3.373
∞	0.253	0.524	0.842	1.036	1.282	1.645	1.960	2.326	2.432	2.576	2.807	3.291

Table 3.1: Percentiles of the F -distribution.

Each table entry is $F_{k_1, k_2}(\alpha) = F_{k_2, k_1}^{-1}(1 - \alpha)$, where $P(X < F_{k_1, k_2}(\alpha)) = A = 1 - \alpha$ with $X \sim F_{k_1, k_2}$.



A	k_1									
	1	2	3	4	5	6	7	8	9	10
$k_2 = 1$										
0.5	1.00	1.50	1.71	1.82	1.89	1.94	1.98	2.00	2.03	2.04
0.9	39.9	49.5	53.6	55.8	57.2	58.2	58.9	59.4	59.9	60.2
0.95	161	199	216	225	230	234	237	239	241	242
0.975	648	799	864	900	922	937	948	957	963	969
0.99	4052	4999	5403	5625	5764	5859	5928	5981	6022	6056
0.995	16211	19999	21615	22500	23056	23437	23715	23925	24091	24224
0.999	405284	499999	540379	562500	576405	585937	592873	598144	602284	605621
$k_2 = 2$										
0.5	0.67	1.00	1.13	1.21	1.25	1.28	1.30	1.32	1.33	1.35
0.9	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39
0.95	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4
0.975	38.5	39.0	39.2	39.2	39.3	39.3	39.4	39.4	39.4	39.4
0.99	98.5	99.0	99.2	99.2	99.3	99.3	99.4	99.4	99.4	99.4
0.995	198.5	199.0	199.2	199.2	199.3	199.3	199.4	199.4	199.4	199.4
0.999	998.5	999.0	999.2	999.2	999.3	999.3	999.4	999.4	999.4	999.4
$k_2 = 3$										
0.5	0.59	0.88	1.00	1.06	1.10	1.13	1.15	1.16	1.17	1.18
0.9	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23
0.95	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79
0.975	17.4	16.0	15.4	15.1	14.9	14.7	14.6	14.5	14.5	14.4
0.99	34.1	30.8	29.5	28.7	28.2	27.9	27.7	27.5	27.3	27.2
0.995	55.6	49.8	47.5	46.2	45.4	44.8	44.4	44.1	43.9	43.7
0.999	167.0	148.5	141.1	137.1	134.6	132.8	131.6	130.6	129.9	129.2
$k_2 = 4$										
0.5	0.55	0.83	0.94	1.00	1.04	1.06	1.08	1.09	1.10	1.11
0.9	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92
0.95	7.7	6.9	6.6	6.4	6.3	6.2	6.1	6.0	6.0	6.0
0.975	12.2	10.6	10.0	9.6	9.4	9.2	9.1	9.0	8.9	8.8
0.99	21.2	18.0	16.7	16.0	15.5	15.2	15.0	14.8	14.7	14.5
0.995	31.3	26.3	24.3	23.2	22.5	22.0	21.6	21.4	21.1	21.0
0.999	74.1	61.2	56.2	53.4	51.7	50.5	49.7	49.0	48.5	48.1
$k_2 = 5$										
0.5	0.53	0.80	0.91	0.96	1.00	1.02	1.04	1.05	1.06	1.07
0.9	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30
0.95	6.6	5.8	5.4	5.2	5.1	5.0	4.9	4.8	4.8	4.7
0.975	10.0	8.4	7.8	7.4	7.1	7.0	6.9	6.8	6.7	6.6
0.99	16.3	13.3	12.1	11.4	11.0	10.7	10.5	10.3	10.2	10.1
0.995	22.8	18.3	16.5	15.6	14.9	14.5	14.2	14.0	13.8	13.6
0.999	47.2	37.1	33.2	31.1	29.8	28.8	28.2	27.6	27.2	26.9

Table 3.2: (Continued) Percentiles of the F -distribution.

A	k_1									
	11	12	13	14	15	20	30	60	120	∞
$k_2 = 1$										
0.5	2.06	2.07	2.08	2.09	2.09	2.12	2.15	2.17	2.18	2.20
0.9	60.5	60.7	60.9	61.1	61.2	61.7	62.3	62.8	63.1	63.3
0.95	243	244	245	245	246	248	250	252	253	254
0.975	973	977	980	983	985	993	1001	1010	1014	1018
0.99	6083	6106	6126	6143	6157	6209	6261	6313	6339	6366
0.995	24334	24426	24505	24572	24630	24836	25044	25253	25359	25464
0.999	608368	610668	612622	614303	615764	620908	626099	631337	633972	636619
$k_2 = 2$										
0.5	1.35	1.36	1.37	1.37	1.38	1.39	1.41	1.43	1.43	1.44
0.9	9.40	9.41	9.41	9.42	9.42	9.44	9.46	9.47	9.48	9.49
0.95	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5
0.975	39.4	39.4	39.4	39.4	39.4	39.4	39.5	39.5	39.5	39.5
0.99	99.4	99.4	99.4	99.4	99.4	99.4	99.5	99.5	99.5	99.5
0.995	199.4	199.4	199.4	199.4	199.4	199.4	199.5	199.5	199.5	199.5
0.999	999.4	999.4	999.4	999.4	999.4	999.4	999.5	999.5	999.5	999.5
$k_2 = 3$										
0.5	1.19	1.20	1.20	1.21	1.21	1.23	1.24	1.25	1.26	1.27
0.9	5.22	5.22	5.21	5.20	5.20	5.18	5.17	5.15	5.14	5.13
0.95	8.76	8.74	8.73	8.71	8.70	8.66	8.62	8.57	8.55	8.53
0.975	14.4	14.3	14.3	14.3	14.3	14.2	14.1	14.0	13.9	13.9
0.99	27.1	27.1	27.0	26.9	26.9	26.7	26.5	26.3	26.2	26.1
0.995	43.5	43.4	43.3	43.2	43.1	42.8	42.5	42.1	42.0	41.8
0.999	128.7	128.3	128.0	127.6	127.4	126.4	125.4	124.5	124.0	123.5
$k_2 = 4$										
0.5	1.12	1.13	1.13	1.13	1.14	1.15	1.16	1.18	1.18	1.19
0.9	3.91	3.90	3.89	3.88	3.87	3.84	3.82	3.79	3.78	3.76
0.95	5.9	5.9	5.9	5.9	5.9	5.8	5.7	5.7	5.7	5.6
0.975	8.8	8.8	8.7	8.7	8.7	8.6	8.5	8.4	8.3	8.3
0.99	14.5	14.4	14.3	14.2	14.2	14.0	13.8	13.7	13.6	13.5
0.995	20.8	20.7	20.6	20.5	20.4	20.2	19.9	19.6	19.5	19.3
0.999	47.7	47.4	47.2	46.9	46.8	46.1	45.4	44.7	44.4	44.1
$k_2 = 5$										
0.5	1.08	1.09	1.09	1.09	1.10	1.11	1.12	1.14	1.14	1.15
0.9	3.28	3.27	3.26	3.25	3.24	3.21	3.17	3.14	3.12	3.10
0.95	4.7	4.7	4.7	4.6	4.6	4.6	4.5	4.4	4.4	4.4
0.975	6.6	6.5	6.5	6.5	6.4	6.3	6.2	6.1	6.1	6.0
0.99	10.0	9.9	9.8	9.8	9.7	9.6	9.4	9.2	9.1	9.0
0.995	13.5	13.4	13.3	13.2	13.1	12.9	12.7	12.4	12.3	12.1
0.999	26.6	26.4	26.2	26.1	25.9	25.4	24.9	24.3	24.1	23.8

Table 3.3: (Continued) Percentiles of the F -distribution.

A	k_1									
	1	2	3	4	5	6	7	8	9	10
$k_2 = 6$										
0.5	0.515	0.780	0.886	0.942	0.977	1.000	1.017	1.030	1.040	1.048
0.9	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94
0.95	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06
0.975	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46
0.99	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87
0.995	18.63	14.54	12.92	12.03	11.46	11.07	10.79	10.57	10.39	10.25
0.999	35.51	27.00	23.70	21.92	20.80	20.03	19.46	19.03	18.69	18.41
$k_2 = 7$										
0.5	0.506	0.767	0.871	0.926	0.960	0.983	1.000	1.013	1.022	1.030
0.9	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70
0.95	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64
0.975	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76
0.99	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62
0.995	16.24	12.40	10.88	10.05	9.52	9.16	8.89	8.68	8.51	8.38
0.999	29.25	21.69	18.77	17.20	16.21	15.52	15.02	14.63	14.33	14.08
$k_2 = 8$										
0.5	0.499	0.757	0.860	0.915	0.948	0.971	0.988	1.000	1.010	1.018
0.9	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54
0.95	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35
0.975	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36	4.30
0.99	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81
0.995	14.69	11.04	9.60	8.81	8.30	7.95	7.69	7.50	7.34	7.21
0.999	25.41	18.49	15.83	14.39	13.48	12.86	12.40	12.05	11.77	11.54
$k_2 = 9$										
0.5	0.494	0.749	0.852	0.906	0.939	0.962	0.978	0.990	1.000	1.008
0.9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42
0.95	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14
0.975	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96
0.99	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26
0.995	13.61	10.11	8.72	7.96	7.47	7.13	6.88	6.69	6.54	6.42
0.999	22.86	16.39	13.90	12.56	11.71	11.13	10.70	10.37	10.11	9.89
$k_2 = 10$										
0.5	0.490	0.743	0.845	0.899	0.932	0.954	0.971	0.983	0.992	1.000
0.9	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32
0.95	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98
0.975	6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78	3.72
0.99	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85
0.995	12.83	9.43	8.08	7.34	6.87	6.54	6.30	6.12	5.97	5.85
0.999	21.04	14.91	12.55	11.28	10.48	9.93	9.52	9.20	8.96	8.75

Table 3.4: (Continued) Percentiles of the F -distribution.

A	k_1									
	11	12	13	14	15	20	30	60	120	∞
$k_2 = 6$										
0.5	1.054	1.060	1.065	1.069	1.072	1.084	1.097	1.109	1.116	1.122
0.9	2.920	2.905	2.892	2.881	2.871	2.836	2.800	2.762	2.742	2.722
0.95	4.03	4.00	3.98	3.96	3.94	3.87	3.81	3.74	3.70	3.67
0.975	5.41	5.37	5.33	5.30	5.27	5.17	5.07	4.96	4.90	4.85
0.99	7.79	7.72	7.66	7.60	7.56	7.40	7.23	7.06	6.97	6.88
0.995	10.13	10.03	9.95	9.88	9.81	9.59	9.36	9.12	9.00	8.88
0.999	18.18	17.99	17.82	17.68	17.56	17.12	16.67	16.21	15.98	15.75
$k_2 = 7$										
0.5	1.037	1.042	1.047	1.051	1.054	1.066	1.079	1.091	1.097	1.103
0.9	2.684	2.668	2.654	2.643	2.632	2.595	2.555	2.514	2.493	2.471
0.95	3.60	3.57	3.55	3.53	3.51	3.44	3.38	3.30	3.27	3.23
0.975	4.71	4.67	4.63	4.60	4.57	4.47	4.36	4.25	4.20	4.14
0.99	6.54	6.47	6.41	6.36	6.31	6.16	5.99	5.82	5.74	5.65
0.995	8.27	8.18	8.10	8.03	7.97	7.75	7.53	7.31	7.19	7.08
0.999	13.88	13.71	13.56	13.43	13.32	12.93	12.53	12.12	11.91	11.70
$k_2 = 8$										
0.5	1.024	1.029	1.034	1.038	1.041	1.053	1.065	1.077	1.083	1.089
0.9	2.52	2.50	2.49	2.48	2.46	2.42	2.38	2.34	2.32	2.29
0.95	3.31	3.28	3.26	3.24	3.22	3.15	3.08	3.01	2.97	2.93
0.975	4.24	4.20	4.16	4.13	4.10	4.00	3.89	3.78	3.73	3.67
0.99	5.73	5.67	5.61	5.56	5.52	5.36	5.20	5.03	4.95	4.86
0.995	7.10	7.01	6.94	6.87	6.81	6.61	6.40	6.18	6.06	5.95
0.999	11.35	11.19	11.06	10.94	10.84	10.48	10.11	9.73	9.53	9.33
$k_2 = 9$										
0.5	1.014	1.019	1.024	1.028	1.031	1.043	1.055	1.067	1.073	1.079
0.9	2.40	2.38	2.36	2.35	2.34	2.30	2.25	2.21	2.18	2.16
0.95	3.10	3.07	3.05	3.03	3.01	2.94	2.86	2.79	2.75	2.71
0.975	3.91	3.87	3.83	3.80	3.77	3.67	3.56	3.45	3.39	3.33
0.99	5.18	5.11	5.05	5.01	4.96	4.81	4.65	4.48	4.40	4.31
0.995	6.31	6.23	6.15	6.09	6.03	5.83	5.62	5.41	5.30	5.19
0.999	9.72	9.57	9.44	9.33	9.24	8.90	8.55	8.19	8.00	7.81
$k_2 = 10$										
0.5	1.006	1.012	1.016	1.020	1.023	1.035	1.047	1.059	1.064	1.070
0.9	2.30	2.28	2.27	2.26	2.24	2.20	2.16	2.11	2.08	2.06
0.95	2.94	2.91	2.89	2.86	2.85	2.77	2.70	2.62	2.58	2.54
0.975	3.66	3.62	3.58	3.55	3.52	3.42	3.31	3.20	3.14	3.08
0.99	4.77	4.71	4.65	4.60	4.56	4.41	4.25	4.08	4.00	3.91
0.995	5.75	5.66	5.59	5.53	5.47	5.27	5.07	4.86	4.75	4.64
0.999	8.59	8.45	8.32	8.22	8.13	7.80	7.47	7.12	6.94	6.76

Table 3.5: (Continued) Percentiles of the F -distribution.

A	k_1									
	1	2	3	4	5	6	7	8	9	10
$k_2 = 11$										
0.5	0.486	0.739	0.840	0.893	0.926	0.948	0.964	0.977	0.986	0.994
0.9	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25
0.95	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85
0.975	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59	3.53
0.99	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54
0.995	12.23	8.91	7.60	6.88	6.42	6.10	5.86	5.68	5.54	5.42
0.999	19.69	13.81	11.56	10.35	9.58	9.05	8.66	8.35	8.12	7.92
$k_2 = 12$										
0.5	0.484	0.735	0.835	0.888	0.921	0.943	0.959	0.972	0.981	0.989
0.9	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19
0.95	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75
0.975	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37
0.99	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30
0.995	11.75	8.51	7.23	6.52	6.07	5.76	5.52	5.35	5.20	5.09
0.999	18.64	12.97	10.80	9.63	8.89	8.38	8.00	7.71	7.48	7.29
$k_2 = 13$										
0.5	0.481	0.731	0.832	0.885	0.917	0.939	0.955	0.967	0.977	0.984
0.9	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14
0.95	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67
0.975	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31	3.25
0.99	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10
0.995	11.37	8.19	6.93	6.23	5.79	5.48	5.25	5.08	4.94	4.82
0.999	17.82	12.31	10.21	9.07	8.35	7.86	7.49	7.21	6.98	6.80
$k_2 = 14$										
0.5	0.479	0.729	0.828	0.881	0.914	0.936	0.952	0.964	0.973	0.981
0.9	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10
0.95	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60
0.975	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21	3.15
0.99	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94
0.995	11.06	7.92	6.68	6.00	5.56	5.26	5.03	4.86	4.72	4.60
0.999	17.14	11.78	9.73	8.62	7.92	7.44	7.08	6.80	6.58	6.40
$k_2 = 15$										
0.5	0.478	0.726	0.826	0.878	0.911	0.933	0.949	0.960	0.970	0.977
0.9	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06
0.95	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54
0.975	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06
0.99	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80
0.995	10.80	7.70	6.48	5.80	5.37	5.07	4.85	4.67	4.54	4.42
0.999	16.59	11.34	9.34	8.25	7.57	7.09	6.74	6.47	6.26	6.08

Table 3.6: (Continued) Percentiles of the F -distribution.

A	k_1									
	11	12	13	14	15	20	30	60	120	∞
$k_2 = 11$										
0.5	1.000	1.005	1.010	1.013	1.017	1.028	1.040	1.052	1.058	1.064
0.9	2.227	2.209	2.193	2.179	2.167	2.123	2.076	2.026	2.000	1.972
0.95	2.82	2.79	2.76	2.74	2.72	2.65	2.57	2.49	2.45	2.40
0.975	3.47	3.43	3.39	3.36	3.33	3.23	3.12	3.00	2.94	2.88
0.99	4.46	4.40	4.34	4.29	4.25	4.10	3.94	3.78	3.69	3.60
0.995	5.32	5.24	5.16	5.10	5.05	4.86	4.65	4.45	4.34	4.23
0.999	7.76	7.63	7.51	7.41	7.32	7.01	6.68	6.35	6.18	6.00
$k_2 = 12$										
0.5	0.995	1.000	1.004	1.008	1.012	1.023	1.035	1.046	1.052	1.058
0.9	2.166	2.147	2.131	2.117	2.105	2.060	2.011	1.960	1.932	1.904
0.95	2.72	2.69	2.66	2.64	2.62	2.54	2.47	2.38	2.34	2.30
0.975	3.32	3.28	3.24	3.21	3.18	3.07	2.96	2.85	2.79	2.72
0.99	4.22	4.16	4.10	4.05	4.01	3.86	3.70	3.54	3.45	3.36
0.995	4.99	4.91	4.84	4.77	4.72	4.53	4.33	4.12	4.01	3.90
0.999	7.14	7.00	6.89	6.79	6.71	6.40	6.09	5.76	5.59	5.42
$k_2 = 13$										
0.5	0.990	0.996	1.000	1.004	1.007	1.019	1.030	1.042	1.048	1.054
0.9	2.116	2.097	2.080	2.066	2.053	2.007	1.958	1.904	1.876	1.846
0.95	2.63	2.60	2.58	2.55	2.53	2.46	2.38	2.30	2.25	2.21
0.975	3.20	3.15	3.12	3.08	3.05	2.95	2.84	2.72	2.66	2.60
0.99	4.02	3.96	3.91	3.86	3.82	3.66	3.51	3.34	3.25	3.17
0.995	4.72	4.64	4.57	4.51	4.46	4.27	4.07	3.87	3.76	3.65
0.999	6.65	6.52	6.41	6.31	6.23	5.93	5.63	5.30	5.14	4.97
$k_2 = 14$										
0.5	0.987	0.992	0.996	1.000	1.003	1.015	1.026	1.038	1.044	1.050
0.9	2.073	2.054	2.037	2.022	2.010	1.962	1.912	1.857	1.828	1.797
0.95	2.57	2.53	2.51	2.48	2.46	2.39	2.31	2.22	2.18	2.13
0.975	3.09	3.05	3.01	2.98	2.95	2.84	2.73	2.61	2.55	2.49
0.99	3.86	3.80	3.75	3.70	3.66	3.51	3.35	3.18	3.09	3.00
0.995	4.51	4.43	4.36	4.30	4.25	4.06	3.86	3.66	3.55	3.44
0.999	6.26	6.13	6.02	5.93	5.85	5.56	5.25	4.94	4.77	4.60
$k_2 = 15$										
0.5	0.983	0.989	0.993	0.997	1.000	1.011	1.023	1.034	1.040	1.046
0.9	2.037	2.017	2.000	1.985	1.972	1.924	1.873	1.817	1.787	1.755
0.95	2.51	2.48	2.45	2.42	2.40	2.33	2.25	2.16	2.11	2.07
0.975	3.01	2.96	2.92	2.89	2.86	2.76	2.64	2.52	2.46	2.40
0.99	3.73	3.67	3.61	3.56	3.52	3.37	3.21	3.05	2.96	2.87
0.995	4.33	4.25	4.18	4.12	4.07	3.88	3.69	3.48	3.37	3.26
0.999	5.94	5.81	5.71	5.62	5.54	5.25	4.95	4.64	4.47	4.31

Table 3.7: (Continued) Percentiles of the F -distribution.

A	k_1									
	1	2	3	4	5	6	7	8	9	10
$k_2 = 20$										
0.5	0.472	0.718	0.816	0.868	0.900	0.922	0.938	0.950	0.959	0.966
0.9	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94
0.95	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35
0.975	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77
0.99	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37
0.995	9.94	6.99	5.82	5.17	4.76	4.47	4.26	4.09	3.96	3.85
0.999	14.82	9.95	8.10	7.10	6.46	6.02	5.69	5.44	5.24	5.08
$k_2 = 30$										
0.5	0.466	0.709	0.807	0.858	0.890	0.912	0.927	0.939	0.948	0.955
0.9	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82
0.95	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16
0.975	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51
0.99	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98
0.995	9.18	6.35	5.24	4.62	4.23	3.95	3.74	3.58	3.45	3.34
0.999	13.29	8.77	7.05	6.12	5.53	5.12	4.82	4.58	4.39	4.24
$k_2 = 60$										
0.5	0.460	0.701	0.798	0.849	0.880	0.901	0.917	0.928	0.937	0.945
0.9	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71
0.95	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99
0.975	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27
0.99	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63
0.995	8.49	5.79	4.73	4.14	3.76	3.49	3.29	3.13	3.01	2.90
0.999	11.97	7.77	6.17	5.31	4.76	4.37	4.09	3.86	3.69	3.54
$k_2 = 120$										
0.5	0.458	0.697	0.793	0.844	0.875	0.896	0.912	0.923	0.932	0.939
0.9	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68	1.65
0.95	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91
0.975	5.15	3.80	3.23	2.89	2.67	2.52	2.39	2.30	2.22	2.16
0.99	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47
0.995	8.18	5.54	4.50	3.92	3.55	3.28	3.09	2.93	2.81	2.71
0.999	11.38	7.32	5.78	4.95	4.42	4.04	3.77	3.55	3.38	3.24
$k_2 = \infty$										
0.5	0.455	0.693	0.789	0.839	0.870	0.891	0.907	0.918	0.927	0.934
0.9	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63	1.60
0.95	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83
0.975	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11	2.05
0.99	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41	2.32
0.995	7.88	5.30	4.28	3.72	3.35	3.09	2.90	2.74	2.62	2.52
0.999	10.83	6.91	5.42	4.62	4.10	3.74	3.47	3.27	3.10	2.96

Table 3.8: (Continued) Percentiles of the F -distribution.

A	k_1									
	11	12	13	14	15	20	30	60	120	∞
$k_2 = 20$										
0.5	0.972	0.977	0.982	0.985	0.989	1.000	1.011	1.023	1.029	1.034
0.9	1.913	1.892	1.875	1.859	1.845	1.794	1.738	1.677	1.643	1.607
0.95	2.31	2.28	2.25	2.22	2.20	2.12	2.04	1.95	1.90	1.84
0.975	2.72	2.68	2.64	2.60	2.57	2.46	2.35	2.22	2.16	2.09
0.99	3.29	3.23	3.18	3.13	3.09	2.94	2.78	2.61	2.52	2.42
0.995	3.76	3.68	3.61	3.55	3.50	3.32	3.12	2.92	2.81	2.69
0.999	4.94	4.82	4.72	4.64	4.56	4.29	4.00	3.70	3.54	3.38
$k_2 = 30$										
0.5	0.961	0.966	0.971	0.974	0.978	0.989	1.000	1.011	1.017	1.023
0.9	1.794	1.773	1.754	1.737	1.722	1.667	1.606	1.538	1.499	1.456
0.95	2.13	2.09	2.06	2.04	2.01	1.93	1.84	1.74	1.68	1.62
0.975	2.46	2.41	2.37	2.34	2.31	2.20	2.07	1.94	1.87	1.79
0.99	2.91	2.84	2.79	2.74	2.70	2.55	2.39	2.21	2.11	2.01
0.995	3.25	3.18	3.11	3.06	3.01	2.82	2.63	2.42	2.30	2.18
0.999	4.11	4.00	3.91	3.82	3.75	3.49	3.22	2.92	2.76	2.59
$k_2 = 60$										
0.5	0.951	0.956	0.960	0.964	0.967	0.978	0.989	1.000	1.006	1.011
0.9	1.680	1.657	1.637	1.619	1.603	1.543	1.476	1.395	1.348	1.291
0.95	1.95	1.92	1.89	1.86	1.84	1.75	1.65	1.53	1.47	1.39
0.975	2.22	2.17	2.13	2.09	2.06	1.94	1.82	1.67	1.58	1.48
0.99	2.56	2.50	2.44	2.39	2.35	2.20	2.03	1.84	1.73	1.60
0.995	2.82	2.74	2.68	2.62	2.57	2.39	2.19	1.96	1.83	1.69
0.999	3.42	3.32	3.23	3.15	3.08	2.83	2.55	2.25	2.08	1.89
$k_2 = 120$										
0.5	0.945	0.950	0.955	0.958	0.961	0.972	0.983	0.994	1.000	1.006
0.9	1.625	1.601	1.580	1.562	1.545	1.482	1.409	1.320	1.265	1.193
0.95	1.87	1.83	1.80	1.78	1.75	1.66	1.55	1.43	1.35	1.25
0.975	2.10	2.05	2.01	1.98	1.94	1.82	1.69	1.53	1.43	1.31
0.99	2.40	2.34	2.28	2.23	2.19	2.03	1.86	1.66	1.53	1.38
0.995	2.62	2.54	2.48	2.42	2.37	2.19	1.98	1.75	1.61	1.43
0.999	3.12	3.02	2.93	2.85	2.78	2.53	2.26	1.95	1.77	1.54
$k_2 = \infty$										
0.5	0.940	0.945	0.949	0.953	0.956	0.967	0.978	0.989	0.994	1.000
0.9	1.570	1.546	1.524	1.505	1.487	1.421	1.342	1.240	1.169	1.000
0.95	1.79	1.75	1.72	1.69	1.67	1.57	1.46	1.32	1.22	1.00
0.975	1.99	1.94	1.90	1.87	1.83	1.71	1.57	1.39	1.27	1.00
0.99	2.25	2.18	2.13	2.08	2.04	1.88	1.70	1.47	1.32	1.00
0.995	2.43	2.36	2.29	2.24	2.19	2.00	1.79	1.53	1.36	1.00
0.999	2.84	2.74	2.66	2.58	2.51	2.27	1.99	1.66	1.45	1.00