Table 3 THE STANDARD NORMAL DISTRIBUTION

$$\Phi(x) = \int_{-\infty}^{x} \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt = P(X \le x)$$

x	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5369
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	0.9131	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

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The Standard Normal Distribution (Continued)

x	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
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	0.9989	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
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.7	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.8	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999	0.9999
3.9	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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Table 2. VALUES OF χ^2_p FOR THE CHI-SQUARE DISTRIBUTION

n \ p	.995	.99	.975	.95	.90	.75
1	7.88	6.63	5.02	3.84	2.71	1.32
2	10.6	9.21	7.38	5.99	4.61	2.77
3	12.8	11.3	9.35	7.81	6.25	4.11
4	14.9	13.3	11.15	9.49	7.78	5.39
5	16.7	15.1	12.8	11.1	9.24	6.63
6	18.5	16.8	14.4	12.6	10.6	7.84
7	22.3	18.5	16.0	14.1	12.0	9.04
8	22.0	20.1	17.5	15.5	13.4	10.2
9	23.6	21.7	19.0	16.9	14.7	11.4
10	25.2	23.2	20.5	18.3	16.0	12.5
11	26.8	24.7	21.9	19.7	17.3	13.7
12	28.3	26.2	23.3	21.0	18.5	14.8
13	29.8	27.7	24.7	22.4	19.8	16.0
14	31.3	29.1	26.1	23.7	21.1	17.1
15	32.8	30.6	27.5	25.0	22.3	18.2
16	34.3	32.0	28.8	26.3	23.5	19.4
17	35.7	33.4	30.2	27.6	24.8	20.5
18	37.2	34.8	31.5	28.9	26.0	21.6
19	38.6	36.2	32.9	30.1	27.2	22.7
20	40.0	37.6	34.2	31.4	28.4	23.8
21	41.4	38.9	35.5	32.7	29.6	24.9
22	42.8	40.3	36.8	33.9	30.8	26.0
23	44.2	41.6	38.1	35.2	32.0	27.1
24	45.6	43.0	39.4	36.4	33.2	28.2
25	46.9	44.3	40.6	37.7	34.4	29.3
26	48.3	45.6	41.9	38.9	35.6	30.4
27	49.6	47.0	43.2	40.1	36.7	31.5
28	51.0	48.3	44.5	41.3	37.9	32.6
29	52.3	49.6	45.7	42.6	39.1	33.7
30	53.7	50.9	47.0	43.8	40.3	34.8
40	66.8	63.7	59.3	55.8	51.8	45.6
50	79.5	76.2	71.4	67.5	63.2	56.3
60	92.0	88.4	83.3	79.1	74.4	67.0
70	104.2	100.4	95.0	90.5	85.5	77.6
80	116.3	112.3	106.6	101.9	96.6	88.1
90	128.3	124.1	118.1	113.1	107.6	98.6
100	140.2	135.8	129.6	124.3	118.5	109.1

WITH n DEGREES OF FREEDOM FOR THE PROBABILITY p.

.50	.25	.10	.05	.025	.01	.005
0.455	.102	.0158	.0039	.0010	.0002	.0000
1.39	.575	.211	.103	.0506	.0201	.0100
2.37	1.21	.584	.352	.216	.115	.072
3.36	1.92	1.06	.711	.484	.297	.207
4.35	2.67	1.61	1.15	.831	.554	.412
5.35	3.45	2.20	1.64	1.24	.872	.676
6.35	4.25	2.83	2.17	1.69	1.24	.989
7.34	5.07	3.49	2.73	2.18	1.65	1.34
8.34	5.90	4.17	3.33	2.70	2.09	1.73
9.34	6.74	4.87	3.94	3.25	2.56	2.16
10.3	7.58	5.58	4.57	3.82	3.05	2.60
11.3	8.44	6.30	5.23	4.40	3.57	3.07
12.3	9.30	7.04	5.89	5.01	4.11	3.57
13.3	10.2	7.79	6.57	5.63	4.66	4.07
14.3	11.0	8.55	7.26	6.26	5.23	4.60
15.3	11.9	9.31	7.96	6.91	5.81	5.14
16.3	12.8	10.1	8.67	7.56	6.41	5.70
17.3	13.7	10.9	9.39	8.23	7.01	6.26
18.3	14.6	11.7	10.1	8.91	7.63	6.84
19.3	15.5	12.4	10.9	9.59	8.26	7.43
20.3	16.3	13.2	11.6	10.3	8.90	8.03
21.3	17.2	14.0	12.3	11.0	9.54	8.64
22.3	18.1	14.8	13.1	11.7	10.2	9.26
23.3	19.0	15.7	13.8	12.4	10.9	9.89
24.3	19.9	16.5	14.6	13.1	11.5	10.5
25.3	20.8	17.3	15.4	13.8	12.2	11.2
26.3	21.7	18.1	16.2	14.6	12.9	11.8
27.3	22.7	18.9	16.9	15.3	13.6	12.5
28.3	23.6	19.8	17.7	16.0	14.3	13.1
29.3	24.5	20.6	18.5	16.8	15.0	13.8
39.3	33.7	29.1	26.5	24.4	22.2	20.7
49.3	42.9	37.7	34.8	32.4	29.7	28.0
59.3	52.3	46.5	43.2	40.5	37.5	35.5
69.3	61.7	55.3	51.7	48.8	45.4	43.3
79.3	71.1	64.3	60.4	57.2	53.5	51.2
89.3	80.6	73.3	69.1	65.6	61.8	59.2
99.3	90.1	82.4	77.9	74.2	70.1	67.3

Table 5 THE F DISTRIBUTION

$$\Pr(F \leq f) = \int_0^f \frac{\Gamma[(r_1+r_2)/2](r_1/r_2)^{r_1/2}\, w^{r_1/2-1}}{\Gamma(r_1/2)\,\Gamma(r_2/2)(1+r_1 w/r_2)^{(r_1+r_2)/2}}\,dw$$

Pr (F ≤ f)	r_2	r_1 = 1	2	3	4	5
0.95	1	161	200	216	225	230
0.975		648	800	864	900	922
0.99		4052	4999	5403	5625	5764
0.95	2	18.5	19.0	19.2	19.2	19.3
0.975		38.5	39.0	39.2	39.3	39.3
0.99		98.5	99.0	99.2	99.3	99.3
0.95	3	10.1	9.55	9.28	9.12	9.01
0.975		17.4	16.0	15.4	15.1	14.9
0.99		34.1	30.8	29.5	28.7	28.2
0.95	4	7.71	6.94	6.59	6.39	6.26
0.975		12.2	10.6	9.98	9.60	9.36
0.99		21.2	18.0	16.7	16.0	15.5
0.95	5	6.61	5.79	5.41	5.19	5.05
0.975		10.0	8.43	7.76	7.39	7.15
0.99		16.3	13.3	12.1	11.4	11.0
0.95	6	5.99	5.14	4.76	4.53	4.39
0.975		8.81	7.26	6.60	6.23	5.99
0.99		13.7	10.9	9.78	9.15	8.75
0.95	7	5.59	4.74	4.35	4.12	3.97
0.975		8.07	6.54	5.89	5.52	5.29
0.99		12.2	9.55	8.45	7.85	7.46
0.95	8	5.32	4.46	4.07	3.85	3.69
0.975		7.57	6.06	5.42	5.05	4.82
0.99		11.3	8.65	7.59	7.01	6.63
0.95	9	5.12	4.26	3.86	3.63	3.48
0.975		7.21	5.71	5.08	4.72	4.48
0.99		10.6	8.02	6.99	6.42	6.06
0.95	10	4.96	4.10	3.71	3.48	3.33
0.975		6.94	5.46	4.83	4.47	4.24
0.99		10.0	7.56	6.55	5.99	5.64
0.95	12	4.75	3.89	3.49	3.26	3.11
0.975		6.55	5.10	4.47	4.12	4.89
0.99		9.33	6.93	5.95	5.41	5.06
0.95	15	4.54	3.68	3.29	3.06	2.90
0.975		6.20	4.77	4.15	3.80	3.58
0.99		8.68	6.36	5.42	4.89	4.56

r_1 = 6	7	8	9	10	12	15
234	237	239	241	242	244	246
937	948	957	963	969	977	985
5859	5928	5982	6023	6056	6103	6157
19.3	19.4	19.4	19.4	19.4	19.4	19.4
39.3	39.4	39.4	39.4	39.4	39.4	39.4
99.3	99.4	99.4	99.4	99.4	99.4	99.4
8.94	8.89	8.85	8.81	8.79	8.74	8.70
14.7	14.6	14.5	14.5	14.4	14.3	14.3
27.9	27.7	27.5	27.3	27.2	27.1	26.9
6.16	6.09	6.04	6.00	5.96	5.91	5.86
9.20	9.07	8.98	8.90	8.84	8.75	8.66
15.2	15.0	14.8	14.7	14.5	14.4	14.2
4.95	4.88	4.82	4.77	4.74	4.68	4.62
6.98	6.85	6.76	6.68	6.62	6.52	6.43
10.7	10.5	10.3	10.2	10.1	9.89	9.72
4.28	4.21	4.15	4.10	4.06	4.00	3.94
5.82	5.70	5.60	5.52	5.46	5.37	5.27
8.47	8.26	8.10	7.98	7.87	7.72	7.56
3.87	3.79	3.73	3.68	3.64	3.57	3.51
5.12	4.99	4.90	4.82	4.76	4.67	4.57
7.19	6.99	6.84	6.72	6.62	6.47	6.61
3.58	3.50	3.44	3.39	3.35	3.28	3.22
4.65	4.53	4.43	4.36	4.30	4.20	4.10
6.37	6.18	6.03	5.91	5.81	5.67	5.52
3.37	3.29	3.23	3.18	3.14	3.07	3.01
4.32	4.20	4.10	4.03	3.96	3.87	3.77
5.80	5.61	5.47	5.35	5.26	5.11	4.96
3.22	3.14	3.06	3.02	2.98	2.91	2.85
4.07	3.95	3.85	3.78	3.72	3.62	3.52
5.39	5.20	5.06	4.94	4.85	4.71	4.56
3.00	2.91	2.85	2.80	2.75	2.69	2.62
3.75	3.61	3.51	3.44	3.57	3.28	3.18
4.82	4.64	4.50	4.39	4.30	4.16	4.01
2.79	2.71	2.64	2.59	2.54	2.48	2.40
3.41	3.29	3.20	3.12	3.06	2.96	2.86
4.32	4.14	4.00	3.89	3.80	3.67	3.52

Table 6. VALUES OF t_p FOR STUDENT'S T-DISTRIBUTION WITH n DEGREES OF FREEDOM FOR THE PROBABILITY p.

p / n	.995	.99	.975	.95	.90	.80	.75	.70	.60	.55
1	63.66	31.82	12.71	6.31	3.08	1.376	1.000	.727	.325	.158
2	6.92	6.96	4.30	2.92	1.89	1.061	.816	.617	.289	.142
3	5.84	4.54	3.18	2.35	1.64	.978	.765	.584	.277	.137
4	4.60	3.75	2.78	2.13	1.53	.941	.741	.569	.271	.134
5	4.03	3.36	2.57	2.02	1.48	.920	.727	.559	.267	.132
6	3.71	3.14	2.45	1.94	1.44	.906	.718	.553	.265	.131
7	3.50	3.00	2.36	1.90	1.42	.896	.711	.549	.263	.130
8	3.36	2.90	2.31	1.86	1.40	.889	.706	.546	.262	.130
9	3.25	2.82	2.26	1.83	1.38	.883	.703	.543	.261	.129
10	3.17	2.76	2.23	1.81	1.37	.879	.700	.542	.260	.129
11	3.11	2.72	2.20	1.80	1.36	.876	.697	.540	.260	.129
12	3.06	2.68	2.18	1.78	1.36	.873	.695	.539	.259	.128
13	3.01	2.65	2.16	1.77	1.35	.870	.694	.538	.259	.128
14	2.98	2.62	2.14	1.76	1.34	.868	.692	.537	.258	.128
15	2.95	2.60	2.13	1.75	1.34	.866	.691	.536	.258	.128
16	2.92	2.58	2.12	1.75	1.34	.865	.690	.535	.258	.128
17	2.90	2.57	2.11	1.74	1.33	.863	.689	.534	.257	.128
18	2.88	2.55	2.10	1.73	1.33	.862	.688	.534	.257	.127
19	2.86	2.54	2.09	1.73	1.33	.861	.688	.533	.257	.127

(Continued)

p / n	.995	.99	.975	.95	.90	.80	.75	.70	60	.55
20	2.84	2.53	2.09	1.72	1.32	.860	.687	.533	.257	.127
21	2.83	2.52	2.08	1.72	1.32	.859	.686	.532	.257	.127
22	2.82	2.51	2.07	1.72	1.32	.858	.686	.532	.256	.127
23	2.81	2.50	2.07	1.71	1.32	.858	.685	.532	.256	.127
24	2.80	2.49	2.06	1.71	1.32	.857	.685	.531	.256	.127
25	2.79	2.48	2.06	1.71	1.32	.856	.684	.531	.256	.127
26	2.78	2.48	2.06	1.71	1.32	.856	.684	.531	.256	.127
27	2.77	2.47	2.05	1.70	1.31	.855	.684	.531	.256	.127
28	2.76	2.47	2.05	1.70	1.31	.855	.683	.530	.256	.127
29	2.76	2.46	2.04	1.70	1.31	.854	.683	.530	.256	.127
30	2.75	2.46	2.04	1.70	1.31	.854	.683	.530	.256	.127
40	2.70	2.42	2.02	1.68	1.30	.851	.681	.529	.255	.126
60	2.66	2.39	2.00	1.67	1.30	.848	.679	.527	.254	.126
120	2.62	2.36	1.98	1.66	1.29	.845	.677	.526	.254	.126
	2.58	2.33	1.96	1.645	1.28	.842	.674	.524	.253	.126