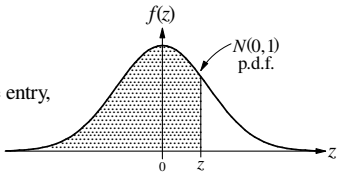
University of Waterloo W. H. Cherry

PROBABILITIES FOR THE STANDARD NORMAL DISTRIBUTION [$N(0,1)$]

IN THE MAIN UPPER TABLE:

Pr[$-\infty < N(0,1) \le z$-value from table margins] = Table entry,

e.g., Pr[$-\infty < N(0,1) \le 0.00$] = $0.5000^{0} = 0.5$;



Notation:

$F(0.01) = .5040^{-1} = 0.50399$

$F(0.05) = .5199^{4} = 0.51994$

$F(2.33) = .9^{2}0097 = 0.990097$,

where $F(z)$ is the $N(0,1)$ c.d.f.:

$$F(z) = \int_{-\infty}^{z} f(t)\,dt = \int_{-\infty}^{z} \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}t^2}\,dt.$$

THE SMALLER LOWER TABLE provides more accurate and convenient inverse lookup for selected probabilities in the interval 0.5 to 0.999 9995.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	$.5000^{0}$	$.5040^{-1}$	$.5080^{-2}$	$.5120^{-3}$	$.5160^{-5}$	$.5199^{4}$	$.5239^{2}$	$.5279^{0}$	$.5319^{-2}$	$.5359^{-4}$
0.1	$.5398^{3}$	$.5438^{0}$	$.5478^{-4}$	$.5517^{2}$	$.5557^{-3}$	$.5596^{2}$	$.5636^{-4}$	$.5675^{-1}$	$.5714^{2}$	$.5753^{5}$
0.2	$.5793^{-4}$	$.5832^{-3}$	$.5871^{-4}$	$.5910^{-5}$	$.5948^{3}$	$.5987^{1}$	$.6026^{-3}$	$.6064^{2}$	$.6103^{-4}$	$.6141^{-1}$
0.3	$.6179^{1}$	$.6217^{2}$	$.6255^{2}$	$.6293^{0}$	$.6331^{-3}$	$.6368^{3}$	$.6406^{-2}$	$.6443^{1}$	$.6480^{3}$	$.6517^{3}$
0.4	$.6554^{2}$	$.6591^{0}$	$.6628^{-4}$	$.6664^{0}$	$.6700^{3}$	$.6736^{4}$	$.6772^{4}$	$.6808^{2}$	$.6844^{-1}$	$.6879^{3}$
0.5	$.6915^{-4}$	$.6950^{-3}$	$.6985^{-3}$	$.7019^{4}$	$.7054^{0}$	$.7088^{4}$	$.7123^{-4}$	$.7157^{-4}$	$.7190^{4}$	$.7224^{0}$
0.6	$.7257^{5}$	$.7291^{-3}$	$.7324^{-3}$	$.7357^{-5}$	$.7389^{1}$	$.7422^{-5}$	$.7454^{-3}$	$.7486^{-3}$	$.7517^{5}$	$.7549^{0}$
0.7	$.7580^{4}$	$.7611^{5}$	$.7642^{4}$	$.7673^{0}$	$.7704^{-5}$	$.7734^{-3}$	$.7764^{-3}$	$.7794^{-5}$	$.7823^{0}$	$.7852^{4}$
0.8	$.7881^{4}$	$.7910^{3}$	$.7939^{-1}$	$.7967^{3}$	$.7995^{5}$	$.8023^{4}$	$.8051^{1}$	$.8078^{5}$	$.8106^{-3}$	$.8133^{-3}$
0.9	$.8159^{4}$	$.8186^{-1}$	$.8212^{1}$	$.8238^{1}$	$.8264^{-1}$	$.8289^{4}$	$.8315^{-3}$	$.8340^{-2}$	$.8365^{-4}$	$.8389^{1}$
1.0	$.8413^{4}$	$.8438^{-5}$	$.8461^{4}$	$.8485^{-1}$	$.8508^{3}$	$.8531^{4}$	$.8554^{3}$	$.8577^{-1}$	$.8599^{3}$	$.8621^{4}$
1.1	$.8643^{3}$	$.8665^{0}$	$.8686^{4}$	$.8708^{-4}$	$.8729^{-4}$	$.8749^{3}$	$.8770^{-2}$	$.8790^{0}$	$.8810^{0}$	$.8830^{-2}$
1.2	$.8849^{3}$	$.8869^{-4}$	$.8888^{-3}$	$.8907^{-5}$	$.8925^{1}$	$.8944^{-5}$	$.8962^{-3}$	$.8980^{-4}$	$.8997^{3}$	$.9015^{-3}$
1.3	$.9032^{0}$	$.9049^{0}$	$.9066^{-2}$	$.9082^{4}$	$.9099^{-2}$	$.9115^{-1}$	$.9131^{-1}$	$.9147^{-4}$	$.9162^{1}$	$.9177^{4}$
1.4	$.9192^{4}$	$.9207^{3}$	$.9222^{0}$	$.9236^{4}$	$.9251^{-3}$	$.9265^{-3}$	$.9279^{-5}$	$.9292^{2}$	$.9306^{-4}$	$.9319^{-1}$
1.5	$.9332^{-1}$	$.9345^{-2}$	$.9357^{4}$	$.9370^{-1}$	$.9382^{2}$	$.9394^{3}$	$.9406^{2}$	$.9418^{-1}$	$.9429^{5}$	$.9441^{-2}$
1.6	$.9452^{0}$	$.9463^{0}$	$.9474^{-2}$	$.9484^{5}$	$.9495^{0}$	$.9505^{3}$	$.9515^{4}$	$.9525^{4}$	$.9535^{2}$	$.9545^{-1}$
1.7	$.9554^{3}$	$.9564^{-3}$	$.9573^{-2}$	$.9582^{-2}$	$.9591^{-3}$	$.9599^{4}$	$.9608^{0}$	$.9616^{4}$	$.9625^{-4}$	$.9633^{-3}$
1.8	$.9641^{-3}$	$.9649^{-5}$	$.9656^{2}$	$.9664^{-2}$	$.9671^{2}$	$.9678^{4}$	$.9686^{-4}$	$.9693^{-4}$	$.9699^{5}$	$.9706^{2}$
1.9	$.9713^{-2}$	$.9719^{3}$	$.9726^{-3}$	$.9732^{0}$	$.9738^{1}$	$.9744^{1}$	$.9750^{0}$	$.9756^{-2}$	$.9761^{5}$	$.9767^{0}$
2.0	$.9772^{5}$	$.9778^{-2}$	$.9783^{1}$	$.9788^{2}$	$.9793^{2}$	$.9798^{2}$	$.9803^{0}$	$.9808^{-3}$	$.9812^{4}$	$.9817^{-1}$
2.1	$.9821^{4}$	$.9826^{-3}$	$.9830^{0}$	$.9834^{1}$	$.9838^{2}$	$.9842^{2}$	$.9846^{1}$	$.9850^{0}$	$.9854^{-3}$	$.9857^{4}$
2.2	$.9861^{0}$	$.9864^{5}$	$.9868^{-1}$	$.9871^{3}$	$.9875^{-5}$	$.9878^{-2}$	$.9881^{-1}$	$.9884^{0}$	$.9887^{0}$	$.9890^{-1}$
2.3	$.9893^{-2}$	$.9896^{-4}$	$.9898^{3}$	$.9^{2}0097$	$.9^{2}0358$	$.9^{2}0613$	$.9^{2}0863$	$.9^{2}1106$	$.9^{2}1344$	$.9^{2}1576$
2.4	$.9^{2}1802$	$.9^{2}2024$	$.9^{2}2240$	$.9^{2}2451$	$.9^{2}2656$	$.9^{2}2857$	$.9^{2}3053$	$.9^{2}3244$	$.9^{2}3431$	$.9^{2}3613$
2.5	$.9^{2}3790$	$.9^{2}3963$	$.9^{2}4132$	$.9^{2}4297$	$.9^{2}4457$	$.9^{2}4614$	$.9^{2}4766$	$.9^{2}4915$	$.9^{2}5060$	$.9^{2}5201$
2.6	$.9^{2}5339$	$.9^{2}5473$	$.9^{2}5604$	$.9^{2}5731$	$.9^{2}5855$	$.9^{2}5975$	$.9^{2}6093$	$.9^{2}6207$	$.9^{2}6319$	$.9^{2}6427$
2.7	$.9^{2}6533$	$.9^{2}6636$	$.9^{2}6736$	$.9^{2}6833$	$.9^{2}6928$	$.9^{2}7020$	$.9^{2}7110$	$.9^{2}7197$	$.9^{2}7282$	$.9^{2}7365$
2.8	$.9^{2}7445$	$.9^{2}7523$	$.9^{2}7599$	$.9^{2}7673$	$.9^{2}7744$	$.9^{2}7814$	$.9^{2}7882$	$.9^{2}7948$	$.9^{2}8012$	$.9^{2}8074$
2.9	$.9^{2}8134$	$.9^{2}8193$	$.9^{2}8250$	$.9^{2}8305$	$.9^{2}8359$	$.9^{2}8411$	$.9^{2}8462$	$.9^{2}8511$	$.9^{2}8559$	$.9^{2}8605$
3.0	$.9^{2}8650$	$.9^{2}8694$	$.9^{2}8736$	$.9^{2}8777$	$.9^{2}8817$	$.9^{2}8856$	$.9^{2}8893$	$.9^{2}8930$	$.9^{2}8965$	$.9^{2}8999$
3.1	$.9^{3}0324$	$.9^{3}0646$	$.9^{3}0957$	$.9^{3}1260$	$.9^{3}1553$	$.9^{3}1836$	$.9^{3}2112$	$.9^{3}2378$	$.9^{3}2636$	$.9^{3}2886$
3.2	$.9^{3}3129$	$.9^{3}3363$	$.9^{3}3590$	$.9^{3}3810$	$.9^{3}4024$	$.9^{3}4230$	$.9^{3}4429$	$.9^{3}4623$	$.9^{3}4810$	$.9^{3}4991$
3.3	$.9^{3}5166$	$.9^{3}5335$	$.9^{3}5499$	$.9^{3}5658$	$.9^{3}5811$	$.9^{3}5959$	$.9^{3}6103$	$.9^{3}6242$	$.9^{3}6376$	$.9^{3}6505$
3.4	$.9^{3}6631$	$.9^{3}6752$	$.9^{3}6869$	$.9^{3}6982$	$.9^{3}7091$	$.9^{3}7197$	$.9^{3}7299$	$.9^{3}7398$	$.9^{3}7493$	$.9^{3}7585$
3.5	$.9^{3}7674$	$.9^{3}7759$	$.9^{3}7842$	$.9^{3}7922$	$.9^{3}7999$	$.9^{3}8074$	$.9^{3}8146$	$.9^{3}8215$	$.9^{3}8282$	$.9^{3}8347$
3.6	$.9^{3}8409$	$.9^{3}8469$	$.9^{3}8527$	$.9^{3}8583$	$.9^{3}8637$	$.9^{3}8689$	$.9^{3}8739$	$.9^{3}8787$	$.9^{3}8834$	$.9^{3}8879$
3.7	$.9^{3}8922$	$.9^{3}8964$	$.9^{4}0039$	$.9^{4}0426$	$.9^{4}0799$	$.9^{4}1158$	$.9^{4}1504$	$.9^{4}1838$	$.9^{4}2159$	$.9^{4}2468$
3.8	$.9^{4}2765$	$.9^{4}3052$	$.9^{4}3327$	$.9^{4}3593$	$.9^{4}3848$	$.9^{4}4094$	$.9^{4}4331$	$.9^{4}4558$	$.9^{4}4777$	$.9^{4}4988$
3.9	$.9^{4}5190$	$.9^{4}5385$	$.9^{4}5573$	$.9^{4}5753$	$.9^{4}5926$	$.9^{4}6092$	$.9^{4}6253$	$.9^{4}6406$	$.9^{4}6554$	$.9^{4}6696$
4.0	$.9^{4}6833$	$.9^{4}6964$	$.9^{4}7090$	$.9^{4}7211$	$.9^{4}7327$	$.9^{4}7439$	$.9^{4}7546$	$.9^{4}7649$	$.9^{4}7748$	$.9^{4}7843$
5	$.9^{6}7134$									
6	$.9^{9}0134$									
7	$.9^{11}8720$									
8	$.9^{15}3779$									
9	$.9^{18}8872$									
10	$.9^{23}2380$									
12	$.9^{32}8224$									
14	$.9^{44}2207$									
16	$.9^{57}3611$									
18	$.9^{72}0259$									
20	$.9^{88}7246$									
25	$.9^{137}6943$									
30	$.9^{197}5093$									
40	$.9^{349}6344$									
50	$.9^{544}8919$									
60	$.9^{783}8762$									
70	$.9^{1066}4577$									
80	$.9^{1392}0976$									
100	$.9^{2173}8656$									

INVERSE $N(0,1)$ C.d.f., giving z for a specified $F(z) \ge 0.5$

.50	0	.60	.2533	.70	.5244	.80	.8416	.90	1.2816	.990	2.3263
.51	.02507	.61	.2793	.71	.5534	.81	.8779	.91	1.3408	.991	2.3656
.52	.05015	.62	.3055	.72	.5828	.82	.9154	.92	1.4051	.992	2.4089
.53	.07527	.63	.3319	.73	.6128	.83	.9542	.93	1.4758	.993	2.4573
.54	.1004	.64	.3585	.74	.6433	.84	.9945	.94	1.5548	.994	2.5121
.55	.1257	.65	.3853	.75	.6745	.85	1.0364	.95	1.6449	.995	2.5758
.56	.1510	.66	.4125	.76	.7063	.86	1.0803	.96	1.7507	.996	2.6521
.57	.1764	.67	.4399	.77	.7388	.87	1.1264	.97	1.8808	.997	2.7478
.58	.2019	.68	.4677	.78	.7722	.88	1.1750	.975	1.9600	.998	2.8782
.59	.2275	.69	.4959	.79	.8064	.89	1.2265	.98	2.0537	.999	3.0902
										$.9^{3}5$	3.2905
										$.9^{4}5$	3.8906
										$.9^{5}5$	4.4172
										$.9^{6}5$	4.8916

2004-06-20

N_{45} right half

University of Waterloo

PROBABILITIES FOR THE STANDARD NORMAL DISTRIBUTION [$N(0,1)$]

W. H. Cherry

N left half

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.8	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
−3.7	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
−3.6	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
−3.5	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.3	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
−0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641
z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09

N right half

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998
3.5	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998	.9998
3.6	.9998	.9998	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
3.7	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
3.8	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999	.9999
z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09

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