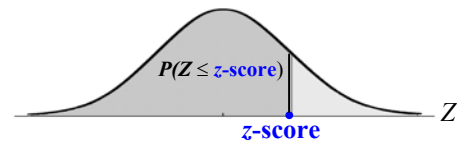


Cumulative Probabilities of the Standard Normal Distribution $N(0, 1)$



<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>	<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>	<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>	<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>	<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>	<u>z-score</u>	<u>Left-sided area</u> <u>$P(Z \leq z\text{-score})$</u>
-4.26	0.00001	-3.55	0.00019	-2.84	0.00226	-2.13	0.01659	-1.42	0.07780	-0.71	0.23885
-4.25	0.00001	-3.54	0.00020	-2.83	0.00233	-2.12	0.01700	-1.41	0.07927	-0.70	0.24196
-4.24	0.00001	-3.53	0.00021	-2.82	0.00240	-2.11	0.01743	-1.40	0.08076	-0.69	0.24510
-4.23	0.00001	-3.52	0.00022	-2.81	0.00248	-2.10	0.01786	-1.39	0.08226	-0.68	0.24825
-4.22	0.00001	-3.51	0.00022	-2.80	0.00256	-2.09	0.01831	-1.38	0.08379	-0.67	0.25143
-4.21	0.00001	-3.50	0.00023	-2.79	0.00264	-2.08	0.01876	-1.37	0.08534	-0.66	0.25463
-4.20	0.00001	-3.49	0.00024	-2.78	0.00272	-2.07	0.01923	-1.36	0.08691	-0.65	0.25785
-4.19	0.00001	-3.48	0.00025	-2.77	0.00280	-2.06	0.01970	-1.35	0.08851	-0.64	0.26109
-4.18	0.00001	-3.47	0.00026	-2.76	0.00289	-2.05	0.02018	-1.34	0.09012	-0.63	0.26435
-4.17	0.00002	-3.46	0.00027	-2.75	0.00298	-2.04	0.02068	-1.33	0.09176	-0.62	0.26763
-4.16	0.00002	-3.45	0.00028	-2.74	0.00307	-2.03	0.02118	-1.32	0.09342	-0.61	0.27093
-4.15	0.00002	-3.44	0.00029	-2.73	0.00317	-2.02	0.02169	-1.31	0.09510	-0.60	0.27425
-4.14	0.00002	-3.43	0.00030	-2.72	0.00326	-2.01	0.02222	-1.30	0.09680	-0.59	0.27760
-4.13	0.00002	-3.42	0.00031	-2.71	0.00336	-2.00	0.02275	-1.29	0.09853	-0.58	0.28096
-4.12	0.00002	-3.41	0.00032	-2.70	0.00347	-1.99	0.02330	-1.28	0.10027	-0.57	0.28434
-4.11	0.00002	-3.40	0.00034	-2.69	0.00357	-1.98	0.02385	-1.27	0.10204	-0.56	0.28774
-4.10	0.00002	-3.39	0.00035	-2.68	0.00368	-1.97	0.02442	-1.26	0.10383	-0.55	0.29116
-4.09	0.00002	-3.38	0.00036	-2.67	0.00379	-1.96	0.02500	-1.25	0.10565	-0.54	0.29460
-4.08	0.00002	-3.37	0.00038	-2.66	0.00391	-1.95	0.02559	-1.24	0.10749	-0.53	0.29806
-4.07	0.00002	-3.36	0.00039	-2.65	0.00402	-1.94	0.02619	-1.23	0.10935	-0.52	0.30153
-4.06	0.00002	-3.35	0.00040	-2.64	0.00415	-1.93	0.02680	-1.22	0.11123	-0.51	0.30503
-4.05	0.00003	-3.34	0.00042	-2.63	0.00427	-1.92	0.02743	-1.21	0.11314	-0.50	0.30854
-4.04	0.00003	-3.33	0.00043	-2.62	0.00440	-1.91	0.02807	-1.20	0.11507	-0.49	0.31207
-4.03	0.00003	-3.32	0.00045	-2.61	0.00453	-1.90	0.02872	-1.19	0.11702	-0.48	0.31561
-4.02	0.00003	-3.31	0.00047	-2.60	0.00466	-1.89	0.02938	-1.18	0.11900	-0.47	0.31918
-4.01	0.00003	-3.30	0.00048	-2.59	0.00480	-1.88	0.03005	-1.17	0.12100	-0.46	0.32276
-4.00	0.00003	-3.29	0.00050	-2.58	0.00494	-1.87	0.03074	-1.16	0.12302	-0.45	0.32636
-3.99	0.00003	-3.28	0.00052	-2.57	0.00508	-1.86	0.03144	-1.15	0.12507	-0.44	0.32997
-3.98	0.00003	-3.27	0.00054	-2.56	0.00523	-1.85	0.03216	-1.14	0.12714	-0.43	0.33360
-3.97	0.00004	-3.26	0.00056	-2.55	0.00539	-1.84	0.03288	-1.13	0.12924	-0.42	0.33724
-3.96	0.00004	-3.25	0.00058	-2.54	0.00554	-1.83	0.03362	-1.12	0.13136	-0.41	0.34090
-3.95	0.00004	-3.24	0.00060	-2.53	0.00570	-1.82	0.03438	-1.11	0.13350	-0.40	0.34458
-3.94	0.00004	-3.23	0.00062	-2.52	0.00587	-1.81	0.03515	-1.10	0.13567	-0.39	0.34827
-3.93	0.00004	-3.22	0.00064	-2.51	0.00604	-1.80	0.03593	-1.09	0.13786	-0.38	0.35197
-3.92	0.00004	-3.21	0.00066	-2.50	0.00621	-1.79	0.03673	-1.08	0.14007	-0.37	0.35569
-3.91	0.00005	-3.20	0.00069	-2.49	0.00639	-1.78	0.03754	-1.07	0.14231	-0.36	0.35942
-3.90	0.00005	-3.19	0.00071	-2.48	0.00657	-1.77	0.03836	-1.06	0.14457	-0.35	0.36317
-3.89	0.00005	-3.18	0.00074	-2.47	0.00676	-1.76	0.03920	-1.05	0.14686	-0.34	0.36693
-3.88	0.00005	-3.17	0.00076	-2.46	0.00695	-1.75	0.04006	-1.04	0.14917	-0.33	0.37070
-3.87	0.00005	-3.16	0.00079	-2.45	0.00714	-1.74	0.04093	-1.03	0.15151	-0.32	0.37448
-3.86	0.00006	-3.15	0.00082	-2.44	0.00734	-1.73	0.04182	-1.02	0.15386	-0.31	0.37828
-3.85	0.00006	-3.14	0.00084	-2.43	0.00755	-1.72	0.04272	-1.01	0.15625	-0.30	0.38209
-3.84	0.00006	-3.13	0.00087	-2.42	0.00776	-1.71	0.04363	-1.00	0.15866	-0.29	0.38591
-3.83	0.00006	-3.12	0.00090	-2.41	0.00798	-1.70	0.04457	-0.99	0.16109	-0.28	0.38974
-3.82	0.00007	-3.11	0.00094	-2.40	0.00820	-1.69	0.04551	-0.98	0.16354	-0.27	0.39358
-3.81	0.00007	-3.10	0.00097	-2.39	0.00842	-1.68	0.04648	-0.97	0.16602	-0.26	0.39743
-3.80	0.00007	-3.09	0.00100	-2.38	0.00866	-1.67	0.04746	-0.96	0.16853	-0.25	0.40129
-3.79	0.00008	-3.08	0.00104	-2.37	0.00889	-1.66	0.04846	-0.95	0.17106	-0.24	0.40517
-3.78	0.00008	-3.07	0.00107	-2.36	0.00914	-1.65	0.04947	-0.94	0.17361	-0.23	0.40905
-3.77	0.00008	-3.06	0.00111	-2.35	0.00939	-1.64	0.05050	-0.93	0.17619	-0.22	0.41294
-3.76	0.00008	-3.05	0.00114	-2.34	0.00964	-1.63	0.05155	-0.92	0.17879	-0.21	0.41683
-3.75	0.00009	-3.04	0.00118	-2.33	0.00990	-1.62	0.05262	-0.91	0.18141	-0.20	0.42074
-3.74	0.00009	-3.03	0.00122	-2.32	0.01017	-1.61	0.05370	-0.90	0.18406	-0.19	0.42465
-3.73	0.00010	-3.02	0.00126	-2.31	0.01044	-1.60	0.05480	-0.89	0.18673	-0.18	0.42858
-3.72	0.00010	-3.01	0.00131	-2.30	0.01072	-1.59	0.05592	-0.88	0.18943	-0.17	0.43251
-3.71	0.00010	-3.00	0.00135	-2.29	0.01101	-1.58	0.05705	-0.87	0.19215	-0.16	0.43644
-3.70	0.00011	-2.99	0.00139	-2.28	0.01130	-1.57	0.05821	-0.86	0.19489	-0.15	0.44038
-3.69	0.00011	-2.98	0.00144	-2.27	0.01160	-1.56	0.05938	-0.85	0.19766	-0.14	0.44433
-3.68	0.00012	-2.97	0.00149	-2.26	0.01191	-1.55	0.06057	-0.84	0.20045	-0.13	0.44828
-3.67	0.00012	-2.96	0.00154	-2.25	0.01222	-1.54	0.06178	-0.83	0.20327	-0.12	0.45224
-3.66	0.00013	-2.95	0.00159	-2.24	0.01255	-1.53	0.06301	-0.82	0.20611	-0.11	0.45620
-3.65	0.00013	-2.94	0.00164	-2.23	0.01287	-1.52	0.06426	-0.81	0.20897	-0.10	0.46017
-3.64	0.00014	-2.93	0.00169	-2.22	0.01321	-1.51	0.06552	-0.80	0.21186	-0.09	0.46414
-3.63	0.00014	-2.92	0.00175	-2.21	0.01355	-1.50	0.06681	-0.79	0.21476	-0.08	0.46812
-3.62	0.00015	-2.91	0.00181	-2.20	0.01390	-1.49	0.06811	-0.78	0.21770	-0.07	0.47210
-3.61	0.00015	-2.90	0.00187	-2.19	0.01426	-1.48	0.06944	-0.77	0.22065	-0.06	0.47608
-3.60	0.00016	-2.89	0.00193	-2.18	0.01463	-1.47	0.07078	-0.76	0.22363	-0.05	0.48006
-3.59	0.00017	-2.88	0.00199	-2.17	0.01500	-1.46	0.07215	-0.75	0.22663	-0.04	0.48405
-3.58	0.00017	-2.87	0.00205	-2.16	0.01539	-1.45	0.07353	-0.74	0.22965	-0.03	0.48803
-3.57	0.00018	-2.86	0.00212	-2.15	0.01578	-1.44	0.07493	-0.73	0.23270	-0.02	0.49202
-3.56	0.00019	-2.85	0.00219	-2.14	0.01618	-1.43	0.07636	-0.72	0.23576	-0.01	0.49601

0.00	0.50000	+0.73	0.76730	+1.46	0.92785	+2.19	0.98574	+2.92	0.99825	+3.65	0.99987
+0.01	0.50399	+0.74	0.77035	+1.47	0.92922	+2.20	0.98610	+2.93	0.99831	+3.66	0.99987
+0.02	0.50798	+0.75	0.77337	+1.48	0.93056	+2.21	0.98645	+2.94	0.99836	+3.67	0.99988
+0.03	0.51197	+0.76	0.77637	+1.49	0.93189	+2.22	0.98679	+2.95	0.99841	+3.68	0.99988
+0.04	0.51595	+0.77	0.77935	+1.50	0.93319	+2.23	0.98713	+2.96	0.99846	+3.69	0.99989
+0.05	0.51994	+0.78	0.78230	+1.51	0.93448	+2.24	0.98745	+2.97	0.99851	+3.70	0.99989
+0.06	0.52392	+0.79	0.78524	+1.52	0.93574	+2.25	0.98778	+2.98	0.99856	+3.71	0.99990
+0.07	0.52790	+0.80	0.78814	+1.53	0.93699	+2.26	0.98809	+2.99	0.99861	+3.72	0.99990
+0.08	0.53188	+0.81	0.79103	+1.54	0.93822	+2.27	0.98840	+3.00	0.99865	+3.73	0.99990
+0.09	0.53586	+0.82	0.79389	+1.55	0.93943	+2.28	0.98870	+3.01	0.99869	+3.74	0.99991
+0.10	0.53983	+0.83	0.79673	+1.56	0.94062	+2.29	0.98899	+3.02	0.99874	+3.75	0.99991
+0.11	0.54380	+0.84	0.79955	+1.57	0.94179	+2.30	0.98928	+3.03	0.99878	+3.76	0.99992
+0.12	0.54776	+0.85	0.80234	+1.58	0.94295	+2.31	0.98956	+3.04	0.99882	+3.77	0.99992
+0.13	0.55172	+0.86	0.80511	+1.59	0.94408	+2.32	0.98983	+3.05	0.99886	+3.78	0.99992
+0.14	0.55567	+0.87	0.80785	+1.60	0.94520	+2.33	0.99010	+3.06	0.99889	+3.79	0.99992
+0.15	0.55962	+0.88	0.81057	+1.61	0.94630	+2.34	0.99036	+3.07	0.99893	+3.80	0.99993
+0.16	0.56356	+0.89	0.81327	+1.62	0.94738	+2.35	0.99061	+3.08	0.99896	+3.81	0.99993
+0.17	0.56749	+0.90	0.81594	+1.63	0.94845	+2.36	0.99086	+3.09	0.99900	+3.82	0.99993
+0.18	0.57142	+0.91	0.81859	+1.64	0.94950	+2.37	0.99111	+3.10	0.99903	+3.83	0.99994
+0.19	0.57535	+0.92	0.82121	+1.65	0.95053	+2.38	0.99134	+3.11	0.99906	+3.84	0.99994
+0.20	0.57926	+0.93	0.82381	+1.66	0.95154	+2.39	0.99158	+3.12	0.99910	+3.85	0.99994
+0.21	0.58317	+0.94	0.82639	+1.67	0.95254	+2.40	0.99180	+3.13	0.99913	+3.86	0.99994
+0.22	0.58706	+0.95	0.82894	+1.68	0.95352	+2.41	0.99202	+3.14	0.99916	+3.87	0.99995
+0.23	0.59095	+0.96	0.83147	+1.69	0.95449	+2.42	0.99224	+3.15	0.99918	+3.88	0.99995
+0.24	0.59483	+0.97	0.83398	+1.70	0.95543	+2.43	0.99245	+3.16	0.99921	+3.89	0.99995
+0.25	0.59871	+0.98	0.83646	+1.71	0.95637	+2.44	0.99266	+3.17	0.99924	+3.90	0.99995
+0.26	0.60257	+0.99	0.83891	+1.72	0.95728	+2.45	0.99286	+3.18	0.99926	+3.91	0.99995
+0.27	0.60642	+1.00	0.84134	+1.73	0.95818	+2.46	0.99305	+3.19	0.99929	+3.92	0.99996
+0.28	0.61026	+1.01	0.84375	+1.74	0.95907	+2.47	0.99324	+3.20	0.99931	+3.93	0.99996
+0.29	0.61409	+1.02	0.84614	+1.75	0.95994	+2.48	0.99343	+3.21	0.99934	+3.94	0.99996
+0.30	0.61791	+1.03	0.84849	+1.76	0.96080	+2.49	0.99361	+3.22	0.99936	+3.95	0.99996
+0.31	0.62172	+1.04	0.85083	+1.77	0.96164	+2.50	0.99379	+3.23	0.99938	+3.96	0.99996
+0.32	0.62552	+1.05	0.85314	+1.78	0.96246	+2.51	0.99396	+3.24	0.99940	+3.97	0.99996
+0.33	0.62930	+1.06	0.85543	+1.79	0.96327	+2.52	0.99413	+3.25	0.99942	+3.98	0.99997
+0.34	0.63307	+1.07	0.85769	+1.80	0.96407	+2.53	0.99430	+3.26	0.99944	+3.99	0.99997
+0.35	0.63683	+1.08	0.85993	+1.81	0.96485	+2.54	0.99446	+3.27	0.99946	+4.00	0.99997
+0.36	0.64058	+1.09	0.86214	+1.82	0.96562	+2.55	0.99461	+3.28	0.99948	+4.01	0.99997
+0.37	0.64431	+1.10	0.86433	+1.83	0.96638	+2.56	0.99477	+3.29	0.99950	+4.02	0.99997
+0.38	0.64803	+1.11	0.86650	+1.84	0.96712	+2.57	0.99492	+3.30	0.99952	+4.03	0.99997
+0.39	0.65173	+1.12	0.86864	+1.85	0.96784	+2.58	0.99506	+3.31	0.99953	+4.04	0.99997
+0.40	0.65542	+1.13	0.87076	+1.86	0.96856	+2.59	0.99520	+3.32	0.99955	+4.05	0.99997
+0.41	0.65910	+1.14	0.87286	+1.87	0.96926	+2.60	0.99534	+3.33	0.99957	+4.06	0.99998
+0.42	0.66276	+1.15	0.87493	+1.88	0.96995	+2.61	0.99547	+3.34	0.99958	+4.07	0.99998
+0.43	0.66640	+1.16	0.87698	+1.89	0.97062	+2.62	0.99560	+3.35	0.99960	+4.08	0.99998
+0.44	0.67003	+1.17	0.87900	+1.90	0.97128	+2.63	0.99573	+3.36	0.99961	+4.09	0.99998
+0.45	0.67364	+1.18	0.88100	+1.91	0.97193	+2.64	0.99585	+3.37	0.99962	+4.10	0.99998
+0.46	0.67724	+1.19	0.88298	+1.92	0.97257	+2.65	0.99598	+3.38	0.99964	+4.11	0.99998
+0.47	0.68082	+1.20	0.88493	+1.93	0.97320	+2.66	0.99609	+3.39	0.99965	+4.12	0.99998
+0.48	0.68439	+1.21	0.88686	+1.94	0.97381	+2.67	0.99621	+3.40	0.99966	+4.13	0.99998
+0.49	0.68793	+1.22	0.88877	+1.95	0.97441	+2.68	0.99632	+3.41	0.99968	+4.14	0.99998
+0.50	0.69146	+1.23	0.89065	+1.96	0.97500	+2.69	0.99643	+3.42	0.99969	+4.15	0.99998
+0.51	0.69497	+1.24	0.89251	+1.97	0.97558	+2.70	0.99653	+3.43	0.99970	+4.16	0.99998
+0.52	0.69847	+1.25	0.89435	+1.98	0.97615	+2.71	0.99664	+3.44	0.99971	+4.17	0.99998
+0.53	0.70194	+1.26	0.89617	+1.99	0.97670	+2.72	0.99674	+3.45	0.99972	+4.18	0.99999
+0.54	0.70540	+1.27	0.89796	+2.00	0.97725	+2.73	0.99683	+3.46	0.99973	+4.19	0.99999
+0.55	0.70884	+1.28	0.89973	+2.01	0.97778	+2.74	0.99693	+3.47	0.99974	+4.20	0.99999
+0.56	0.71226	+1.29	0.90147	+2.02	0.97831	+2.75	0.99702	+3.48	0.99975	+4.18	0.99999
+0.57	0.71566	+1.30	0.90320	+2.03	0.97882	+2.76	0.99711	+3.49	0.99976	+4.19	0.99999
+0.58	0.71904	+1.31	0.90490	+2.04	0.97932	+2.77	0.99720	+3.50	0.99977	+4.20	0.99999
+0.59	0.72240	+1.32	0.90658	+2.05	0.97982	+2.78	0.99728	+3.51	0.99978	+4.21	0.99999
+0.60	0.72575	+1.33	0.90824	+2.06	0.98030	+2.79	0.99736	+3.52	0.99978	+4.22	0.99999
+0.61	0.72907	+1.34	0.90988	+2.07	0.98077	+2.80	0.99744	+3.53	0.99979	+4.23	0.99999
+0.62	0.73237	+1.35	0.91149	+2.08	0.98124	+2.81	0.99752	+3.54	0.99980	+4.24	0.99999
+0.63	0.73565	+1.36	0.91309	+2.09	0.98169	+2.82	0.99760	+3.55	0.99981	+4.25	0.99999
+0.64	0.73891	+1.37	0.91466	+2.10	0.98214	+2.83	0.99767	+3.56	0.99981	+4.26	0.99999
+0.65	0.74215	+1.38	0.91621	+2.11	0.98257	+2.84	0.99774	+3.57	0.99982	+4.27	0.99999
+0.66	0.74537	+1.39	0.91774	+2.12	0.98300	+2.85	0.99781	+3.58	0.99983	+4.28	0.99999
+0.67	0.74857	+1.40	0.91924	+2.13	0.98341	+2.86	0.99788	+3.59	0.99983	+4.29	0.99999
+0.68	0.75175	+1.41	0.92073	+2.14	0.98382	+2.87	0.99795	+3.60	0.99984	+4.30	0.99999
+0.69	0.75490	+1.42	0.92220	+2.15	0.98422	+2.88	0.99801	+3.61	0.99985	+4.31	0.99999
+0.70	0.75804	+1.43	0.92364	+2.16	0.98461	+2.89	0.99807	+3.62	0.99985	+4.32	0.99999
+0.71	0.76115	+1.44	0.92507	+2.17	0.98500	+2.90	0.99813	+3.63	0.99986	+4.33	0.99999
+0.72	0.76424	+1.45	0.92647	+2.18	0.98537	+2.91	0.99819	+3.64	0.99986	+4.34	0.99999

Note: To linearly interpolate for “in-between” values, solve
 $(z_{\text{above}} - z_{\text{below}})(P_{\text{between}} - P_{\text{below}}) = (z_{\text{between}} - z_{\text{below}})(P_{\text{above}} - P_{\text{below}})$
for either z_{between} or P_{between} , whichever required, given the other.

Right-sided area: $P(Z \geq z\text{-score}) = 1 - \text{Left-sided area}$

Interval area: $P(a \leq Z \leq b) = P(Z \leq b) - P(Z \leq a)$