Spreadsheet Formulas for the Wilcoxon Rank Sum Test and Power Calculation

Wilcoxon Rank Sum Test, per NUREG-1505

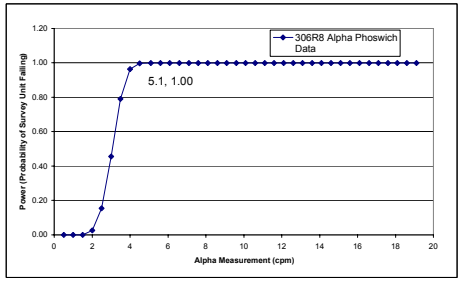
LBGR 2.1 *(For this calculation, LBGR = 3w for Building 722 Background)*
(Reference Dataset - Building 722 Alpha Phoswich)

DATA	AREA	ADJUSTED DATA	RANKS	SURVEY AREA RANKS
1	R	1	36.5	0
3	R	3	70.5	0
3	R	3	70.5	0
1	R	1	36.5	0
4	R	4	90.5	0
4	R	4	90.5	0
4	R	4	90.5	0
1	R	1	36.5	0
4	R	4	90.5	0
4	R	4	90.5	0
9	R	9	127.5	0
7	R	7	122	0
2	R	2	51	0
2	R	2	51	0
4	R	4	90.5	0
3	R	3	70.5	0
1	R	1	36.5	0
6	R	6	113	0
3	R	3	70.5	0
3	R	3	70.5	0
2	R	2	51	0
1	R	1	36.5	0
2	R	2	51	0
4	R	4	90.5	0
4	R	4	90.5	0
7	R	7	122	0
3	R	3	70.5	0
3	R	3	70.5	0
7	R	7	122	0
5	R	5	103.5	0
2	R	2	51	0
2	R	2	51	0
4	R	4	90.5	0
3	R	3	70.5	0
6	R	6	113	0
0	R	0	23.5	0
6	R	6	113	0
2	R	2	51	0
3	R	3	70.5	0
4	R	4	90.5	0
5	R	5	103.5	0
7	R	7	122	0
4	R	4	90.5	0
9	R	9	127.5	0
5	R	5	103.5	0
0	R	0	23.5	0
3	R	3	70.5	0
7	R	7	122	0
6	R	6	113	0
3	R	3	70.5	0
3	R	3	70.5	0
3	R	3	70.5	0
4	R	4	90.5	0
5	R	5	103.5	0
6	R	6	113	0
14	R	14	130	0
2	R	2	51	0
6	R	6	113	0
6	R	6	113	0
7	R	7	122	0
4	R	4	90.5	0
0	R	0	23.5	0
4	R	4	90.5	0
2	R	2	51	0
3	R	3	70.5	0
3	R	3	70.5	0
3	R	3	70.5	0
3	R	3	70.5	0
2	R	2	51	0
2	R	2	51	0
4	R	4	90.5	0
6	R	6	113	0
10	R	10	129	0
5	R	5	103.5	0
8	R	8	126	0
3	R	3	70.5	0
2	R	2	51	0
0	R	0	23.5	0
3	R	3	70.5	0
4	R	4	90.5	0
2	R	2	51	0
5	R	5	103.5	0
5	R	5	103.5	0
3	R	3	70.5	0
6	R	6	113	0
7	R	7	122	0
1	R	1	36.5	0
1	R	1	36.5	0
5	R	5	103.5	0
6	R	6	113	0
2	R	2	51	0
4	R	4	90.5	0
2	R	2	51	0

Survey Unit Stats		
Count	30	*m*
SD	1.4	
Median	1	
Reference Stats		
Count	100	*n*
SD	2.3	
Median	3	
Critical Value	2319.7	
Bkgd Median plus LBGR	5.1	

Retrospective Power Curve Calculatior *p1* and *p2* pull data from Table 10-3 shee
From Example in Section 10.5 of NUREG-1505

C Measurement	(C-LBGR)/SD	Rounded	p1	p2	E(Wmw)	Var(Wmw)	SD(Wmw)	z	Power
0.5	-0.685	-0.700	0.310309	0.164691	930.927	27728.18	166.5178	5.544592	0.00
1	-0.471	-0.500	0.361837	0.206266	1085.511	30527.37	174.7208	4.39953	0.00
1.5	-0.2567	-0.300	0.416002	0.253419	1248.006	32551.92	180.4215	3.359879	0.00
2	-0.0428	0.000	0.5	0.333333	1500	33749.87	183.7114	1.928027	0.03
2.5	0.1712	0.200	0.556231	0.391392	1668.693	33212.15	182.242	1.017918	0.15
3	0.3851	0.400	0.611351	0.451875	1834.053	31650.28	177.9053	0.113248	0.45
3.5	0.5990	0.600	0.664313	0.513387	1992.939	29210.8	170.9117	-0.81176	0.79
4	0.8130	0.800	0.714196	0.574469	2142.588	26112.02	161.5921	-1.78466	0.96
4.5	1.0269	1.000	0.76025	0.633702	2280.75	22612.7	150.3752	-2.83657	1.00
5.1	**1.2836**	**1.300**	**0.821015**	**0.716331**	**2463.045**	**17177.93**	**131.0646**	**-4.64538**	**1.00**
5.6	1.4976	1.500	0.838901	0.741698	2516.703	15430.91	124.2212	-5.33325	1
6.1	1.7115	1.700	0.87105	0.788602	2613.15	12167.03	110.3043	-6.88051	1
6.6	1.9254	1.900	0.898454	0.830022	2695.362	9303.458	96.45443	-8.72082	1
7.1	2.1394	2.100	0.92135	0.865767	2764.05	6902.339	83.08032	-10.9514	1
7.6	2.3533	2.400	0.948062	0.908982	2844.186	4171.257	64.58527	-15.3283	1
8.1	2.5673	2.600	0.96145	0.931365	2884.35	2874.835	53.61749	-19.2129	1
8.6	2.7812	2.800	0.971881	0.949208	2915.643	1925.492	43.88043	-24.1894	1
9.1	2.9951	3.000	0.979848	0.963118	2939.544	1253.533	35.40527	-30.6549	1
9.6	3.2091	3.200	0.985811	0.973725	2957.433	795.0252	28.19619	-39.127	1
10.1	3.4230	3.400	0.990188	0.981636	2970.564	489.9821	22.13554	-50.4331	1
10.6	3.6370	3.600	0.993336	0.98741	2980.008	294.5209	17.16161	-65.6003	1
11.1	3.8509	3.900	0.993336	0.98741	2980.008	294.5209	17.16161	-65.6003	1
11.6	4.0648	4.100	0.997661	0.995497	2992.983	74.1341	8.610116	-132.261	1
12.1	4.2788	4.300	0.997661	0.995497	2992.983	74.1341	8.610116	-132.261	1
12.6	4.4927	4.500	0.997661	0.995497	2992.983	74.1341	8.610116	-132.261	1
13.1	4.7067	4.700	0.997661	0.995497	2992.983	74.1341	8.610116	-132.261	1
13.6	4.9206	4.900	0.997661	0.995497	2992.983	74.1341	8.610116	-132.261	1
14.1	5.1345	5.100	0.999796	0.999599	2999.388	3.367395	1.835046	-624.065	1
14.6	5.3485	5.300	0.999796	0.999599	2999.388	3.367395	1.835046	-624.065	1
15.1	5.5624	5.600	0.999796	0.999599	2999.388	3.367395	1.835046	-624.065	1
15.6	5.7763	5.800	0.999796	0.999599	2999.388	3.367395	1.835046	-624.065	1
16.1	5.9903	6.000	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
16.6	6.2042	6.200	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
17.1	6.4182	6.400	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
17.6	6.6321	6.600	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
18.1	6.8460	6.800	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
18.6	7.0600	7.100	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1
19.1	7.2739	7.300	0.999989	0.999978	2999.967	0.032952	0.181526	-6311.86	1



Based on the number of measurements and the observed standard deviation, a survey unit with a median measurement equal to the background median plus the LBGR (5.1) will have a 1.0 probability that the survey unit will **correctly** fail (i.e., the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR [i.e., the survey unit is indistinguishable from background] is rejected).

1	R	1	36.5	0
6	R	6	113	0
4	R	4	90.5	0
2	R	2	51	0
2	R	2	51	0
3	R	3	70.5	0
3	R	3	70.5	0
2	S	-0.1	19	19
1	S	-1.1	13.5	13.5
0	S	-2.1	5.5	5.5
3	S	0.9	29	29
2	S	-0.1	19	19
0	S	-2.1	5.5	5.5
3	S	0.9	29	29
0	S	-2.1	5.5	5.5
0	S	-2.1	5.5	5.5
2	S	-0.1	19	19
4	S	1.9	41.5	41.5
0	S	-2.1	5.5	5.5
3	S	0.9	29	29
4	S	1.9	41.5	41.5
1	S	-1.1	13.5	13.5
3	S	0.9	29	29
1	S	-1.1	13.5	13.5
0	S	-2.1	5.5	5.5
3	S	0.9	29	29
3	S	0.9	29	29
1	S	-1.1	13.5	13.5
0	S	-2.1	5.5	5.5
0	S	-2.1	5.5	5.5
0	S	-2.1	5.5	5.5
2	S	-0.1	19	19
0	S	-2.1	5.5	5.5
1	S	-1.1	13.5	13.5
2	S	-0.1	19	19
1	S	-1.1	13.5	13.5
3	S	0.9	29	29
		Sum =	8515	517

* This spreadsheet is originally designed to work with a set of twenty measurements, 10 from the survey unit (S) and 10 from the background reference area (R).
If a different number of measurements have been performed, it is necessary to modify the spreadsheet to account for the change in the number of measurements.

# of R:	100	*n*
# of S:	30	*m*
Avg Rank R:	80	
Avg Rank S:	17	

For *m* or *n* greater than 20, the critical value (k) can be calculated for Scenario B from

$$\frac{m(n+m+1)}{2} + z\sqrt{\frac{nm(n+m+1)}{12}}$$

z = 97.5% percentile of standard normal distribution = 1.960

k = 2319.7

Since the sum of survey unit ranks is less than the critical value, the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR (i.e., the survey unit is indistinguishable from background) is accepted and the survey unit passes.*Scenario B*

Spreadsheet Formulas for the Wilcoxon Rank Sum Test and Power Calculation

Wilcoxon Rank Sum Test, per NUREG-1505

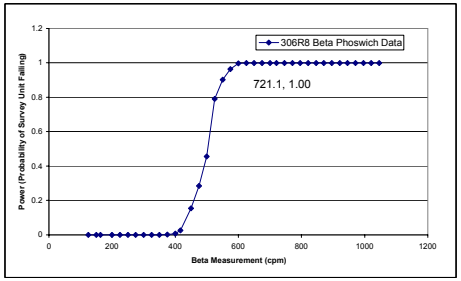
LBGR 417.60 *(For this calculation, LBGR = 3w for Building 722 Background)*
(Reference Dataset - Building 722 Beta Phoswich)

DATA	AREA	ADJUSTED DATA	RANKS	SURVEY AREA RANKS
211	R	211	44	0
358	R	358	90	0
278	R	278	73	0
275	R	275	71	0
234	R	234	55	0
209	R	209	43	0
429	R	429	102	0
327	R	327	84.5	0
237	R	237	57	0
258	R	258	63	0
370	R	370	92	0
497	R	497	112	0
448	R	448	105	0
401	R	401	95	0
423	R	423	101	0
368	R	368	91	0
432	R	432	103	0
485	R	485	110	0
418	R	418	99	0
337	R	337	87	0
498	R	498	113.5	0
496	R	496	111	0
617	R	617	124	0
511	R	511	117.5	0
463	R	463	107	0
480	R	480	108	0
411	R	411	97	0
457	R	457	106	0
437	R	437	104	0
484	R	484	109	0
541	R	541	122	0
498	R	498	113.5	0
529	R	529	119	0
511	R	511	117.5	0
405	R	405	96	0
537	R	537	121	0
420	R	420	100	0
297	R	297	78	0
533	R	533	120	0
501	R	501	116	0
239	R	239	59	0
327	R	327	84.5	0
342	R	342	88	0
271	R	271	68.5	0
274	R	274	70	0
371	R	371	93	0
376	R	376	94	0
238	R	238	58	0
243	R	243	60	0
281	R	281	75.5	0
295	R	295	77	0
316	R	316	82	0
271	R	271	68.5	0
306	R	306	81	0
597	R	597	123	0
717	R	717	125	0
225	R	225	50	0
276	R	276	72	0
301	R	301	80	0
500	R	500	115	0
232	R	232	54	0
201	R	201	39.5	0
183	R	183	36	0
250	R	250	62	0
223	R	223	48.5	0
201	R	201	39.5	0
205	R	205	41	0
280	R	280	74	0
270	R	270	67	0
319	R	319	83	0
328	R	328	86	0
923	R	923	127	0
281	R	281	75.5	0
265	R	265	64	0
1187	R	1187	130	0
779	R	779	126	0
1026	R	1026	129	0
935	R	935	128	0
353	R	353	89	0
412	R	412	98	0
160	R	160	31	0
170	R	170	33	0
173	R	173	35	0
236	R	236	56	0
221	R	221	46.5	0
219	R	219	45	0
194	R	194	38	0
162	R	162	32	0
245	R	245	61	0
172	R	172	34	0
226	R	226	51.5	0
223	R	223	48.5	0
266	R	266	65	0

Survey Unit Stats		
Count	30	*m*
SD	50	
Median	182.5	
Reference Stats		
Count	100	*n*
SD	186	
Median	303.5	
Critical Value	2319.7	
Bkgd Median plus LBGR	721.1	

Retrospective Power Curve Calculation *p1* and *p2* pull data from Table 10-3 sheet
From Example in Section 10.5 of NUREG-1505

C Measurement	(C-LBGR)/SD	Rounded	p1	p2	E(Wmw)	Var(Wmw)	SD(Wmw)	z	Power
125	-1.570	-1.600	0.12895	0.046501	386.85	12166.63	110.3025	13.30297	0
150	-1.436	-1.400	0.161099	0.063897	483.297	15431.31	124.2228	11.03584	0
163	-1.3661	-1.400	0.161099	0.063897	483.297	15431.31	124.2228	11.03584	0
200	-1.1676	-1.200	0.198072	0.085944	594.216	18974.27	137.7471	9.147085	0
225	-1.0334	-1.000	0.218338	0.098892	655.014	20795.32	144.2058	8.315797	0.00
250	-0.8993	-0.900	0.23975	0.113202	719.25	22612.7	150.3752	7.547458	0.00
275	-0.7652	-0.800	0.262259	0.12892	786.777	24395.96	156.1921	6.834044	0.00
300	-0.6310	-0.600	0.335687	0.18476	1007.061	29210.4	170.9105	4.956626	0.00
325	-0.4969	-0.500	0.361837	0.206266	1085.511	30527.37	174.7208	4.39953	0.00
350	-0.3627	-0.400	0.388649	0.229172	1165.947	31649.89	177.9042	3.868675	0.00
375	-0.2286	-0.200	0.443769	0.27893	1331.307	33212.15	182.242	2.869226	0.00
400	-0.0944	-0.100	0.471814	0.305606	1415.442	33614.65	183.343	2.393102	0.01
417	-0.0032	0.000	0.5	0.333333	1500	33749.87	183.7114	1.928027	0.03
450	0.1739	0.200	0.556231	0.391392	1668.693	33212.15	182.242	1.017918	0.15
475	0.3080	0.300	0.583998	0.421415	1751.994	32551.92	180.4215	0.566487	0.29
500	0.4421	0.400	0.611351	0.451875	1834.053	31650.28	177.9053	0.113248	0.45
525	0.5763	0.600	0.664313	0.513387	1992.939	29210.8	170.9117	-0.81176	0.79
550	0.7104	0.700	0.689691	0.544073	2069.073	27728.18	166.5178	-1.29039	0.90
575	0.8446	0.800	0.714196	0.574469	2142.588	26112.02	161.5921	-1.78466	0.96
600	0.9787	1.000	0.76025	0.633702	2280.75	22612.7	150.3752	-2.83657	1.00
625	1.1129	1.100	0.781662	0.662216	2344.986	20795.32	144.2058	-3.40337	1.00
650	1.2470	1.200	0.801928	0.6898	2405.784	18974.27	137.7471	-4.00432	1.00
675	1.3811	1.400	0.821015	0.716331	2463.045	17177.93	131.0646	-4.64538	1.00
700	1.5153	1.500	0.838901	0.741698	2516.703	15430.91	124.2212	-5.33325	1.00
721.1	**1.6285**	**1.600**	**0.855578**	**0.765812**	**2566.734**	**13754.81**	**117.2809**	**-6.07544**	**1.00**
746.1	1.7627	1.800	0.885334	0.810016	2656.002	10679.64	103.3423	-7.75869	1
771.1	1.8968	1.900	0.898454	0.830022	2695.362	9303.458	96.45443	-8.72082	1
796.1	2.0309	2.000	0.910445	0.848605	2731.335	8043.786	89.68716	-9.77994	1
821.1	2.1651	2.200	0.931218	0.881527	2793.654	5878.728	76.67286	-12.2528	1
846.1	2.2992	2.300	0.940103	0.895917	2820.309	4969.774	70.49663	-13.7043	1
871.1	2.4334	2.400	0.948062	0.908982	2844.186	4171.257	64.58527	-15.3283	1
896.1	2.5675	2.600	0.96145	0.931365	2884.35	2874.835	53.61749	-19.2129	1
921.1	2.7017	2.700	0.967004	0.940817	2901.012	2360.946	48.58957	-21.544	1
946.1	2.8358	2.800	0.971881	0.949208	2915.643	1925.492	43.88043	-24.1894	1
971.1	2.9699	3.000	0.979848	0.963118	2939.544	1253.533	35.40527	-30.6549	1
996.1	3.1041	3.100	0.983053	0.968795	2949.159	1001.092	31.64004	-34.6067	1
1021.1	3.2382	3.200	0.985811	0.973725	2957.433	795.0252	28.19619	-39.127	1
1046.1	3.3724	3.400	0.990188	0.981636	2970.564	489.9821	22.13554	-50.4331	1



Based on the number of measurements and the observed standard deviation, a survey unit with a median measurement equal to the background median plus the LBGR (721.1) will have a 1.0 probability that the survey unit will **correctly** fail (i.e., the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR [i.e., the survey unit is indistinguishable from background] is rejected).

299	R	299	79	0
227	R	227	53	0
206	R	206	42	0
226	R	226	51.5	0
269	R	269	66	0
221	R	221	46.5	0
193	R	193	37	0
142	S	-275.6	2	2
347	S	-70.6	30	30
328	S	-89.6	29	29
185	S	-232.6	17	17
179	S	-238.6	14	14
137	S	-280.6	1	1
249	S	-168.6	27	27
234	S	-183.6	25	25
161	S	-256.6	7	7
177	S	-240.6	13	13
163	S	-254.6	8	8
187	S	-230.6	18	18
144	S	-273.6	3	3
175	S	-242.6	10.5	10.5
157	S	-260.6	5	5
219	S	-198.6	23	23
199	S	-218.6	20	20
184	S	-233.6	16	16
175	S	-242.6	10.5	10.5
171	S	-246.6	9	9
158	S	-259.6	6	6
181	S	-236.6	15	15
151	S	-266.6	4	4
239	S	-178.6	26	26
271	S	-146.6	28	28
221	S	-196.6	24	24
176	S	-241.6	12	12
206	S	-211.6	22	22
188	S	-229.6	19	19
204	S	-213.6	21	21
		Sum =	8515	465

* This spreadsheet is originally designed to work with a set of twenty measurements, 10 from the survey unit (S) and 10 from the background reference area (R).
If a different number of measurements have been performed, it is necessary to modify the spreadsheet to account for the change in the number of measurements.

# of R:	100	*n*
# of S:	30	*m*
Avg Rank R:	81	
Avg Rank S:	16	

For *m* or *n* greater than 20, the critical value (k) can be calculated for Scenario B from

$$\frac{m(n+m+1)}{2} + z\sqrt{\frac{nm(n+m+1)}{12}}$$

z = 97.5% percentile of standard normal distribution = 1.960

k = 2319.7

Since the sum of survey unit ranks is less than the critical value, the null hypothesis that the difference between the survey unit median and the background median is less than the LBGR (i.e., the survey unit is indistinguishable from background) is accepted and the survey unit passes.*Scenario B*

Quantile Test

per Section 7 of NUREG-1505		From Table A.7	
n (Survey)	30	*r*	6
m (Ref)	100	*k*	4
alpha/2	0.025	*alpha*	0.025

If *k* of the *r* largest ranks are from the survey unit, the null hypoth
(30,100) in Table A.7

Alpha Phoswich Ranks		Beta Phoswich Ranks	
Sorted Ranks	Location	Sorted Ranks	Location
5.5	S	1	S
5.5	S	2	S
5.5	S	3	S
5.5	S	4	S
5.5	S	5	S
5.5	S	6	S
5.5	S	7	S
5.5	S	8	S
5.5	S	9	S
5.5	S	10.5	S
13.5	S	10.5	S
13.5	S	12	S
13.5	S	13	S
13.5	S	14	S
13.5	S	15	S
13.5	S	16	S
19	S	17	S
19	S	18	S
19	S	19	S
19	S	20	S
19	S	21	S
23.5	R	22	S
23.5	R	23	S
23.5	R	24	S
23.5	R	25	S
29	S	26	S
29	S	27	S
29	S	28	S
29	S	29	S
29	S	30	S
29	S	31	R
29	S	32	R
36.5	R	33	R
36.5	R	34	R
36.5	R	35	R
36.5	R	36	R
36.5	R	37	R
36.5	R	38	R
36.5	R	39.5	R
36.5	R	39.5	R
41.5	S	41	R
41.5	S	42	R
51	R	43	R
51	R	44	R
51	R	45	R
51	R	46.5	R
51	R	46.5	R
51	R	48.5	R
51	R	48.5	R
51	R	50	R
51	R	51.5	R
51	R	51.5	R
51	R	53	R
51	R	54	R
51	R	55	R
51	R	56	R
51	R	57	R

51	R	58	R
51	R	59	R
70.5	R	60	R
70.5	R	61	R
70.5	R	62	R
70.5	R	63	R
70.5	R	64	R
70.5	R	65	R
70.5	R	66	R
70.5	R	67	R
70.5	R	68.5	R
70.5	R	68.5	R
70.5	R	70	R
70.5	R	71	R
70.5	R	72	R
70.5	R	73	R
70.5	R	74	R
70.5	R	75.5	R
70.5	R	75.5	R
70.5	R	77	R
70.5	R	78	R
70.5	R	79	R
70.5	R	80	R
70.5	R	81	R
90.5	R	82	R
90.5	R	83	R
90.5	R	84.5	R
90.5	R	84.5	R
90.5	R	86	R
90.5	R	87	R
90.5	R	88	R
90.5	R	89	R
90.5	R	90	R
90.5	R	91	R
90.5	R	92	R
90.5	R	93	R
90.5	R	94	R
90.5	R	95	R
90.5	R	96	R
90.5	R	97	R
90.5	R	98	R
90.5	R	99	R
103.5	R	100	R
103.5	R	101	R
103.5	R	102	R
103.5	R	103	R
103.5	R	104	R
103.5	R	105	R
103.5	R	106	R
103.5	R	107	R
113	R	108	R
113	R	109	R
113	R	110	R
113	R	111	R
113	R	112	R
113	R	113.5	R
113	R	113.5	R
113	R	115	R
113	R	116	R
113	R	117.5	R
113	R	117.5	R
122	R	119	R
122	R	120	R
122	R	121	R

122	R	122	R
122	R	123	R
122	R	124	R
122	R	125	R
126	R	126	R
127.5	R	127	R
127.5	R	128	R
129	R	129	R
130	R	130	R
0 of top 6 from S		**0 of top 6 from S**	

If the *r*-th largest measurement is among a group of tied (equal-in-value) measurements, increase *r* to include the tied measurements. Also increase *k* by the same amount (EPA 230-R-94-004).

r=12
k=10
0 of top 12 from S

hesis is rejected.

Reproduction of Table 10-3 from NUREG-1505

(C-LBGR)/SD	p1	p2
-6.0	0.00001	0
-5.0	0.000204	0.00001
-4.0	0.002339	0.000174
-3.5	0.006664	0.000738
-3.0	0.016947	0.00269
-2.5	0.03855	0.008465
-2.0	0.07865	0.023066
-1.9	0.089555	0.027714
-1.8	0.101546	0.033114
-1.7	0.114666	0.039348
-1.6	0.12895	0.046501
-1.5	0.144422	0.054656
-1.4	0.161099	0.063897
-1.3	0.178985	0.074301
-1.2	0.198072	0.085944
-1.1	0.218338	0.098892
-1.0	0.23975	0.113202
-0.9	0.262259	0.12892
-0.8	0.285804	0.146077
-0.7	0.310309	0.164691
-0.6	0.335687	0.18476
-0.5	0.361837	0.206266
-0.4	0.388649	0.229172
-0.3	0.416002	0.253419
-0.2	0.443769	0.27893
-0.1	0.471814	0.305606
0.0	0.5	0.333333
0.1	0.528186	0.361978
0.2	0.556231	0.391392
0.3	0.583998	0.421415
0.4	0.611351	0.451875
0.5	0.638163	0.482593
0.6	0.664313	0.513387
0.7	0.689691	0.544073
0.8	0.714196	0.574469
0.9	0.737741	0.604402
1.0	0.76025	0.633702
1.1	0.781662	0.662216
1.2	0.801928	0.6898
1.3	0.821015	0.716331
1.4	0.838901	0.741698
1.5	0.855578	0.765812
1.6	0.87105	0.788602
1.7	0.885334	0.810016
1.8	0.898454	0.830022
1.9	0.910445	0.848605
2.0	0.92135	0.865767
2.1	0.931218	0.881527
2.2	0.940103	0.895917
2.3	0.948062	0.908982
2.4	0.955157	0.920777
2.5	0.96145	0.931365
2.6	0.967004	0.940817
2.7	0.971881	0.949208
2.8	0.976143	0.956616
2.9	0.979848	0.963118
3.0	0.983053	0.968795
3.1	0.985811	0.973725
3.2	0.988174	0.977981
3.3	0.990188	0.981636
3.4	0.991895	0.984758
3.5	0.993336	0.98741
4.0	0.997661	0.995497
5.0	0.999796	0.999599
6.0	0.999989	0.999978