STP 226

EXAM #3 A

Material from chapters 7-9

Honor Statement:
I have neither given nor received information regarding this exam, and I will not do so until all exams have been graded and returned.

Signed ______________________

Date_________________________

______________________________ ___________________________
PRINTED NAME CLASS TIME

DIRECTIONS:

This is a closed book examination. **You may use one 4X6 or smaller note card with hand written notes and a graphing calculator.**
Formulas , z-tables and t-tables are included at the end of the test.
Part one has 3 questions for which you need to provide complete and well-organized answers. Include sketches as requested to explain your answers. Round up all answers to required decimal places. Part two consists of 8 multiple choice questions and part 3 consists of 8 true-false statements. Place answers to the multiple choice and true-false questions in the tables below. You can earn 104 points (4 points are extra credit points).

RELAX and Good Luck!

Place answers to multiple choice questions below, use letters A-E as appropriate

Question number	#4	#5	#6	#7	#8	#9	#10	#11
Answer:								

Place answers to true-false statements below, circle T or F as appropriate

Statement number	#1	#2	#3	#4	#5	#6	#7	#8
Answer (circle one)	T F	T F	T F	T F	T F	T F	T F	T F

STUDENT IS ALLOWED A NOTE CARD

Part one. Show all work for questions #1-#3

Question #1 (15 points) ***Water Taxi Safety***

A water taxi sank in Baltimore's Inner Harbor, because it was overloaded. An investigation revealed that the safe passenger load 3500 pounds and it was exceeded that day. Based on the data from National Health survey weights of American men have a **normal distribution** with a mean $\mu = 172$ pounds and a standard deviation $\sigma = 29$ pounds. Suppose the water taxi is boarded by 20 randomly selected men and $\bar{x}$ is their average weight.

a) Indicate what the sampling distribution is of $\overline{X}$ for samples of size 20, give the mean and SD of that distribution, round your answers to 3 decimal places as needed.

The Distribution shape is:_________________

Mean=_______________ SD=_______________

b) Find the probability that $\bar{x}$ will be larger than 175 (so that their total weight exceeds safety capacity of 3500 pounds)

P($\bar{x}$ >175)=___________________________________

Question #2 (15 points) ***Perception of Time***

Randomly selected STP226 students participated in an experiment to test their ability to determine when 1 min (60 sec) had passed. Forty students yielded a sample mean of 58.3 sec. Assume that σ= 9.5 sec.

a) Construct a 95% confidence interval of the population mean of all STP 226 students. Clearly show all work by hand. Give 3 decimal places.

b) Based on the results in part a), is it likely that the true population mean is reasonably close to 60 second? Explain your answer.

YES NO (circle one)

Explanation: ____

c) What sample size is needed for the margin of error in the CI you computed in part a to be no more then 1.5 seconds?

ANSWER____

Question#3 (10points)
Suppose you are testing hypotheses: $H_0 : \mu = 8$ versus $H_a : \mu < 8$, you are using a z-test and your test statistics is z= -1.57. Use tables to compute the **p- value** for your test, **include appropriate sketch illustrating your computation. Give 4 decimal places.**

Sketch:____________________________ p-value: ___________________________

Part two: Multiple choice questions. Select one from A to E as appropriate.
(5 points each)
Use following information for Questions #4-#8
Red Blood cell count
A simple random sample of 30 US adults is obtained and each person's red blood cell count (in cells per microliter) is measured. A sample mean is 4.63. Let μ be a mean blood cell count for all US adults.

Question #4 Suppose the population standard deviation for red blood cell count is 0.54. Compute a Margin of Error in 95.44% confidence interval for μ. Round your answer to 4 decimal places.

A) 1.6906 B) 0.1972 C) 0.0986 D) 0.0180 E) none of these

Question#5 Suppose population standard deviation for red blood cell count is 0.54 and you want to test at 5% significance level the following hypotheses:
$H_0 : \mu = 4.5$ versus $H_a : \mu \neq 4.5$ using a z-test. Select critical value(s) for the rejection region for your test:

(A) ± 1.645 (B) ± 2 (C) 1.645 (D) ± 1.96 (E) none of these

Question#6: Suppose the p-value for your test you conducted in previous question (#5) was 0.1873, what is the conclusion for your test at 5% significance level? Select one of the answers below:

(A) Reject H_0, we have no evidence for H_a at $\alpha = 0.05$
(B) Do not reject H_0, we have no evidence for H_a at $\alpha = 0.05$
(C) Reject H_0, we have evidence for H_a at $\alpha = 0.05$
(D) Do not reject H_0, we have evidence for H_a at $\alpha = 0.05$

Question #7 Suppose the population standard deviation is unknown, but a sample standard deviation is given. If you wanted to compute 90% confidence interval for μ and use a t-interval procedure, what is the appropriate t-value you need to use in computing of a margin of error in your confidence interval, give appropriate degrees of freedom.

A) df=29, t=1.699 B) df=30, t=1.310 C) df=29, t=1.311

D) df=30, t=1.697 E) none of these

Question #8 Suppose 95 % confidence interval for μ is: (4.44, 4.82).
Based on that interval do you think it is reasonable to assume that μ is close to 4 cells per microliter? ? Select appropriate answer from the following:

A) No, because CI is above 4 cells per microliter
B) Yes, because CI is above 4 cells per microliter
C) Yes, because sample mean was above 4 cells per microliter
D) No, because lower endpoint of CI is only a little above 4 cells per microliter
E) Not enough information

Use following Information for Questions #9-#11
California Speeding
A simple random sample of 40 recorded speeds (in mi/hr) is obtained from cars traveling on section of Highway 405 in Los Angeles. The sample has a mean of 68.4 mi/hr and a population standard deviation of 5.7 mi/hr. We want to test if there is evidence at 1% significance level that the mean speed of all cars on that section of Highway 405 (μ) is greater than a posted limit of 65 mi/hr?

Question#9: State appropriate null and alternative hypotheses, use appropriate symbolic notation.

(A)$H_0{:}\mu = 65 H_a{:}\mu \neq 65$ (B) $H_0{:}\mu < 65 H_a{:}\mu > 65$

(C)$H_0{:}\mu = 68.4 H_a{:}\mu > 65$ (D) $H_0{:}\mu = 65 H_a{:}\mu > 65$ (E) $H_0{:}\mu \neq 65 H_a{:}\mu = 68.4$

Question#10: Compute the appropriate test statistics, round your answer to 2 decimal places

(A) z = 3.77 (B) z = 2.33 (C)z = - 3.77 (D) z = - 2.33 (E) none of these

Question#11: Suppose null hypothesis was rejected at 1% significance level. In that case give the answer to the question posed in the problem.

(A) There is no sufficient evidence at $\alpha = 0.01$ that the mean speed of all cars on that section of Highway 405 (μ) is greater than a posted limit of 65 mi/hr.

(B) There is sufficient evidence at $\alpha = 0.01$ that the mean speed of all cars on that section of Highway 405 (μ) is greater than a posted limit of 65 mi/hr.

(C) There is sufficient evidence at $\alpha = 0.01$ that the mean speed of all cars on that section of Highway 405 (μ) is not greater than a posted limit of 65 mi/hr.

(D)There is no sufficient evidence at $\alpha = 0.01$ that the mean speed of all cars on that section of Highway 405 (μ) is equal to a posted limit of 65 mi/hr.

Part three: TRUE- FALSE questions (3 points each). **Decide if each of the following statements is True or False.**

Statement#1 Suppose 90% confidence interval for a mean age of participants in a large mathematical conference , based on a random sample of 120 participants, is (35, 49). We can say that 90% of all participants in that mathematical conference are between 35 and 49 years old.

True **False**

Statement#2 Suppose the mean annual income for adult women in one city is $28,520 with standard deviation of $5190 and the distribution is extremely left skewed. For the samples of size 69, sample mean $\bar{x}$ has approximately normal distribution.

True **False**

Statement#3 If we compute 95 % and 90% confidence intervals for the mean final exam score of all Mat 117 students at ASU last semester, then 90% confidence interval will be wider than 95% confidence interval.

True **False**

Statement#4 In testing hypothesis null hypothesis will be rejected if p-value for the test is greater than selected significance level α.

True **False**

Statement#5 If we test $H_0: \mu = 18$ versus $H_a: \mu \neq 18$ and H_0 is rejected, but later a mega study concluded that $\mu = 22$, then by rejecting H_0 we committed Type I error.

True **False**

Statement#6 If test statistics falls outside of the rejection region, we reject null hypothesis.

True **False**

Statement#7 Suppose we conducted a z-test of the following hypotheses: $H_0: \mu = 8$ versus $H_a: \mu \neq 8$ and we rejected null hypothesis at 5% significance level. In that case 95% confidence interval for μ computed from the same data would contain 8.

True **False**

Statement#8 If p-value for the right tailed z-test test is 0.032, then p-value for the two tailed z test is 0.064.

True **False**

STUDENT IS ALLOWED A NOTE CARD

FORMULAS

Sampling Distribution of $\overline{X}$ **:** $\mu_{\bar{x}} = \mu$, $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$,

Standardized version of $\overline{X}$: $z = \frac{\bar{x}-\mu}{\sigma/\sqrt{n}}$

Studentized version of $\overline{X}$ **:** $t = \dfrac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$

Confidence Intervals for , Confidence level C = $(1 - \alpha) * 100\%$

Z-interval: $\bar{x} \pm z_{\alpha/2}\frac{\sigma}{\sqrt{n}}$ Margin of error: $E = z_{\alpha/2}\frac{\sigma}{\sqrt{n}}$

t-interval: $\bar{x} \pm t_{\alpha/2}\frac{s}{\sqrt{n}}$, *df = n-1*,

Sample size estimation: $n = \left(\frac{z_{\alpha/2}\sigma}{E}\right)^2$

Hypothesis test for one Population Mean

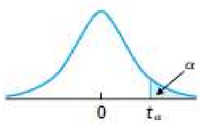
$H_0{:}\mu = \mu_0$ vs $H_a{:}\mu \neq \mu_0$ or $H_a{:}\mu > \mu_0$ or $H_a{:}\mu < \mu_0$

Z-test (σknown): test statistics: $z = \frac{\bar{x}-\mu_0}{\sigma/\sqrt{n}}$

t-test (σunknown): test statistics: $t = \frac{\bar{x}-\mu_0}{s/\sqrt{n}}$, *df = n-1*

STUDENT IS ALLOWED A NOTE CARD

TABLE IV
Values of t_α



df	$t_{0.10}$	$t_{0.05}$	$t_{0.025}$	$t_{0.01}$	$t_{0.005}$	df
1	3.078	6.314	12.706	31.821	63.657	1
2	1.886	2.920	4.303	6.965	9.925	2
3	1.638	2.353	3.182	4.541	5.841	3
4	1.533	2.132	2.776	3.747	4.604	4
5	1.476	2.015	2.571	3.365	4.032	5
6	1.440	1.943	2.447	3.143	3.707	6
7	1.415	1.895	2.365	2.998	3.499	7
8	1.397	1.860	2.306	2.896	3.355	8
9	1.383	1.833	2.262	2.821	3.250	9
10	1.372	1.812	2.228	2.764	3.169	10
11	1.363	1.796	2.201	2.718	3.106	11
12	1.356	1.782	2.179	2.681	3.055	12
13	1.350	1.771	2.160	2.650	3.012	13
14	1.345	1.761	2.145	2.624	2.977	14
15	1.341	1.753	2.131	2.602	2.947	15
16	1.337	1.746	2.120	2.583	2.921	16
17	1.333	1.740	2.110	2.567	2.898	17
18	1.330	1.734	2.101	2.552	2.878	18
19	1.328	1.729	2.093	2.539	2.861	19
20	1.325	1.725	2.086	2.528	2.845	20
21	1.323	1.721	2.080	2.518	2.831	21
22	1.321	1.717	2.074	2.508	2.819	22
23	1.319	1.714	2.069	2.500	2.807	23
24	1.318	1.711	2.064	2.492	2.797	24
25	1.316	1.708	2.060	2.485	2.787	25
26	1.315	1.706	2.056	2.479	2.779	26
27	1.314	1.703	2.052	2.473	2.771	27
28	1.313	1.701	2.048	2.467	2.763	28
29	1.311	1.699	2.045	2.462	2.756	29
30	1.310	1.697	2.042	2.457	2.750	30
31	1.309	1.696	2.040	2.453	2.744	31
32	1.309	1.694	2.037	2.449	2.738	32
33	1.308	1.692	2.035	2.445	2.733	33
34	1.307	1.691	2.032	2.441	2.728	34
35	1.306	1.690	2.030	2.438	2.724	35
36	1.306	1.688	2.028	2.434	2.719	36
37	1.305	1.687	2.026	2.431	2.715	37
38	1.304	1.686	2.024	2.429	2.712	38
39	1.304	1.685	2.023	2.426	2.708	39
40	1.303	1.684	2.021	2.423	2.704	40
41	1.303	1.683	2.020	2.421	2.701	41
42	1.302	1.682	2.018	2.418	2.698	42
43	1.302	1.681	2.017	2.416	2.695	43
44	1.301	1.680	2.015	2.414	2.692	44
45	1.301	1.679	2.014	2.412	2.690	45
46	1.300	1.679	2.013	2.410	2.687	46
47	1.300	1.678	2.012	2.408	2.685	47
48	1.299	1.677	2.011	2.407	2.682	48
49	1.299	1.677	2.010	2.405	2.680	49

STUDENT IS ALLOWED A NOTE CARD

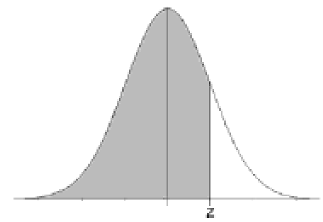
TABLE IV (cont.)
Values of t_α

df	$t_{0.10}$	$t_{0.05}$	$t_{0.025}$	$t_{0.01}$	$t_{0.005}$	df
50	1.299	1.676	2.009	2.403	2.678	50
51	1.298	1.675	2.008	2.402	2.676	51
52	1.298	1.675	2.007	2.400	2.674	52
53	1.298	1.674	2.006	2.399	2.672	53
54	1.297	1.674	2.005	2.397	2.670	54
55	1.297	1.673	2.004	2.396	2.668	55
56	1.297	1.673	2.003	2.395	2.667	56
57	1.297	1.672	2.002	2.394	2.665	57
58	1.296	1.672	2.002	2.392	2.663	58
59	1.296	1.671	2.001	2.391	2.662	59
60	1.296	1.671	2.000	2.390	2.660	60
61	1.296	1.670	2.000	2.389	2.659	61
62	1.295	1.670	1.999	2.388	2.657	62
63	1.295	1.669	1.998	2.387	2.656	63
64	1.295	1.669	1.998	2.386	2.655	64
65	1.295	1.669	1.997	2.385	2.654	65
66	1.295	1.668	1.997	2.384	2.652	66
67	1.294	1.668	1.996	2.383	2.651	67
68	1.294	1.668	1.995	2.382	2.650	68
69	1.294	1.667	1.995	2.382	2.649	69
70	1.294	1.667	1.994	2.381	2.648	70
71	1.294	1.667	1.994	2.380	2.647	71
72	1.293	1.666	1.993	2.379	2.646	72
73	1.293	1.666	1.993	2.379	2.645	73
74	1.293	1.666	1.993	2.378	2.644	74
75	1.293	1.665	1.992	2.377	2.643	75
80	1.292	1.664	1.990	2.374	2.639	80
85	1.292	1.663	1.988	2.371	2.635	85
90	1.291	1.662	1.987	2.368	2.632	90
95	1.291	1.661	1.985	2.366	2.629	95
100	1.290	1.660	1.984	2.364	2.626	100
200	1.286	1.653	1.972	2.345	2.601	200
300	1.284	1.650	1.968	2.339	2.592	300
400	1.284	1.649	1.966	2.336	2.588	400
500	1.283	1.648	1.965	2.334	2.586	500
600	1.283	1.647	1.964	2.333	2.584	600
700	1.283	1.647	1.963	2.332	2.583	700
800	1.283	1.647	1.963	2.331	2.582	800
900	1.282	1.647	1.963	2.330	2.581	900
1000	1.282	1.646	1.962	2.330	2.581	1000
2000	1.282	1.646	1.961	2.328	2.578	2000

1.282	1.645	1.960	2.326	2.576
$z_{0.10}$	$z_{0.05}$	$z_{0.025}$	$z_{0.01}$	$z_{0.005}$

STUDENT IS ALLOWED A NOTE CARD

Standard Normal Cumulative Probability Table

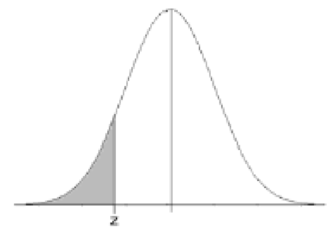


Cumulative probabilities for POSITIVE z-values are shown in the following table:

z	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	0.5359
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

STUDENT IS ALLOWED A NOTE CARD

Standard Normal Cumulative Probability Table



Cumulative probabilities for NEGATIVE z-values are shown in the following table:

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

STUDENT IS ALLOWED A NOTE CARD