**Must show all your work step by step in order to receive the full credit; Excel is not allowed. (26-37)**

1. Solve the following problems using the binomial tables:
2. If n=50 and p=.40, find P(x=11)
3. If n=100 and p=.20, find P(x>10)
4. If n=20 and p= .60, find P(x<13)
5. If n=20 and p=.80, find P(x≤ 14)
6. If n=20 and p=.30, find P(5≤X≤8)
7. If n=20 and p=.70, find P(X≥15)
8. Ten trials are conducted in a Bernouli process in which the probability of success in a given trial is 0.6. If x= the number of successes, determine the following:
9. E(x)
10. σx

1. P(x=5)
2. P(4≤x≤8)
3. P(3≤x≤7)
4. The proportion of consumers favoring a new product is p = 0.80 A sample of n = 10 persons is randomly selected. Use the binomial formula to determine the probabilities for the following number of consumer favoring a product.
5. Exactly 5 d. Greater then 2
6. Greater than or equal to 3 e. Less than 4
7. Less than or equal to 9 f. Equal to 7
8. Suppose 20% of the people in the city prefer Pepsi cola as their soft drink. If a random sample of 6 is chosen, the number of Pepsi drinkers could vary from 0 to 6. Shown here are the numbers of Pepsi drinkers occurring in the sample. Use the data to determine the mean number or pepsi drinkers in a sample of 6 in the city and compute the standard deviation.

 Pepsi drinkers probability

0 .373

1 .247

2 .019

3 .211

4 .002

5 .118

6 .030

1. (\*\*\*Please draw the graph)

Find a Z score, call it Zo, such that:

1. P (Z < Zo) = 0.9808
2. P (Z < Zo) = 0.9850
3. P (-Zo ≤Z ≤Zo) = 0.95
4. P (-Zo ≤Z ≤Zo) = 0.9
5. P (-Zo ≤Z ≤Zo) = 0.6826
6. P (-Zo ≤ Z ≤Zo) = 0.9950
7. (\*\*\*Please draw the graph)

Let the random variable x be normally distributed with mean 5 and variance 4, Find the following probabilities.

1. P(X≥ 5.7)
2. P(X≤ 3.4)
3. P(5.7 ≤ X ≤ 5.8)
4. (\*\*\*Please draw the graph)

Using the normal probabilities table, calculate the areas under the standard normal curve for the following z values

1. Between Z=0.0 and Z= 1.2
2. Between Z=0.0 and Z= -0.9
3. Between Z= -1.71 and Z= -2.03
4. Between Z= -1.72 and Z= 2.53
5. Greater than Z= 2.50
6. Greater than Z= -0.60
7. Less than Z= -1.22
8. Less than Z= 1.66
9. Find $x\_{0}$ from the following probabilities given that $μ=160, σ=16.$

|  |  |  |
| --- | --- | --- |
|  | **Show your work** | **Please draw graph** |
| a. | P$\left(X>x\_{0}\right)=0.8770$ |   |
| b. | P$\left(X< x\_{0}\right)=0.12$ |  |
| c. | P$\left(X<x\_{0}\right)=0.97$ |  |
| d. | P$\left(136 \leq X \leq x\_{0}\right)=0.4808$ |   |
| e. | P$\left(x\_{0 }\leq X \leq 204\right)=0.8185$ |   |
| f. | P$\left(180\leq X\leq x\_{0}\right)=0.0919$ |  |

1. Find the Z scores for the following normal distribution problems.

|  |  |  |
| --- | --- | --- |
|  | **Show your work** | **Please draw graph** |
| a. | µ = 604, σ = 56.8, P(X ≤ 635) |  |
| b. | µ = 48, σ2 = 144, P(X < 20) |  |
| c. | µ = 111, σ = 33.8, P(100 ≤ X ≤ 150) |  |
| d. | µ = 264, σ2 = 118.81, P(250 < X < 255) |   |
| e. | µ = 37, σ = 4.35, P(X > 35) |  |
| f. | µ = 156, σ = 11.4, P(X ≥ 170) |  |

1. Find the value of x if the random variable X is normally distribution with mean 50 and variance 36.

|  |  |  |
| --- | --- | --- |
|  | **Show your work** | **Please draw graph** |
| a. | P(X ≥ x) = 0.0655  |  |
| b. | P(X ≤ x) = 0.8686  |  |
| c. | P(40 ≤ X ≤ x) = 0.6715 |  |
| d. | P(x ≤ X ≤ 50) = 0.3531 |  |

1. Find the following probabilities:

|  |  |  |
| --- | --- | --- |
|  | **Show your work** | **Please draw graph** |
| a. | P(-1.4 < Z < 0.6)  |  |
| b. | P(Z > -1.44)  |  |
| c. | P(Z < 2.03)  |  |
| d. | P(Z > 1.67) |  |
| e. | P(Z < 2.84) |  |
| f. | P(1.14 < Z < 2.43) |  |

1. Suppose that the following data are randomly selected from a population of normally distributed values:

4 5 6 5 5

* 1. Find a 80% confidence interval from the mean $μ$.
	2. Find a 95% confidence interval from the mean $μ$.
	3. Find a 98% confidence interval from the mean $μ$.