STA 2023 REVIEW II (not all inclusive)

1. True/False

___The standard deviation of the sample mean is always equal to the standard deviation of the population.

___The number of defective vending machines on a college campus is an example of a continuous random variable.

___Every normal distribution has a mean = 0 and standard deviation = 1.

___A binomial random variable is a discrete random variable.

2. Which of the following is a valid probability distribution?

a)

X	p(x)
0	.30
1	.20
2	.40

b)

x	p(x)
-3	.35
0	.65
3	-.10

c)

x	p(x)
0	.36
3	.52
6	.22

d)

x	p(x)
-8	.24
-4	.65
0	.11

3. In a study of the time college freshmen use to study each week, it is found that the mean is 6.8 hours with a standard deviation of 2.5 hours. If 100 freshmen are randomly selected, what is the probability that their mean weekly study time exceeds seven hours?

4. Suppose in a recent national election, 40% of the voters were men. If a random sample of 25 voters was selected, what is the probability that more than 10 but less than 20 were women?

5. A traffic study conducted at one point on an interstate highway shows that vehicle speeds are normally distributed with a mean of 63.5 miles per hour and a standard deviation of 4.8 mph.

   a) If a vehicle is randomly selected, what is the probability that its speed is between 55 and 65 mph?
   b) 60% of the speeds in the distribution exceed what value?

6. Find the mean and variance of the following probability distribution:

X	-9	1	4
P(x)	.3	.4	.3

Answer Key

1. F, F, F, T
2. d
3. .2119
4. .937
5. a) .5833 b) 62.3 mph
6. a) -1.1 b) 28.29