Name:_____ Math 130

Mock Exam 2

1. Suppose you are going to make a bet with your friend on the result of drawing one card from a standard poker deck. You will win $100 if you draw a black face card or black Ace, you will lose $20 if you draw any other black card, and you will lose $15 dollars if you draw any other card. Let X denote the amount of money you will win when playing this game once.

A) Find the probability distribution of X

B) Find the expected value of X

C) Find the Standard Deviation of X

D) Explain the meaning of your answer from part (B)

2. Jermey suspects he is lactose intolerant. The probability of him experiencing a stomach ache after eating some kind of dairy product is about 33%. Assume that Jermey's indigestion is independent of the other times he eats dairy products. Let X denote the number of times Jermey experiences indigestion among the next 30 times he eats dairy.

A) What distribution does X have?

B) Find the other 6 things you are supposed to list when solving problems for this kind of random variable.

C) What is the probability that Jermey has indigestion exactly 12 times?

D) What is the probability that Jermey has indigestion between 10 and 12 times (inclusive)?

E) What is the expected value, standard deviation, and variance of X?

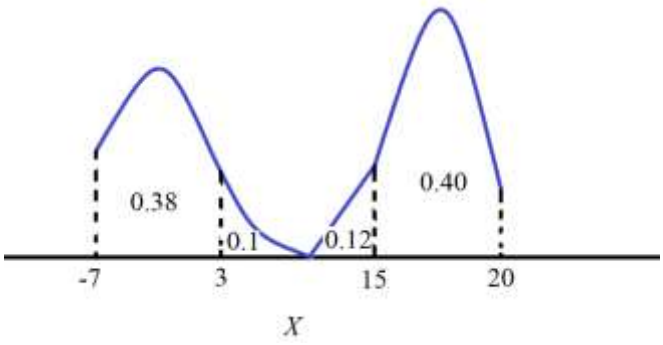
3. Suppose the random variable *X* has a uniform distribution on the interval [12, 38].

A) Find the value of *c* that makes this a probability distribution

B) Find P(X=19)

C) FInd P(15< X < 23)

4. Suppose X is a random variable whose density curve is given below.



A) What are all possible values of X?

B) Find P(-10< X < 15)

5. The runtime of a youtube video has a normal distribution with a mean of 6 minutes and a standard deviation of 2 minutes.

A) What is the probability that the next time you watch a youtube video it will take at most 10 minutes?

B) What is the probability that the next time you watch a youtube video it will last more than 8 minutes?

C) What is the probability that the next time you watch a youtube video it will take between 5 minutes and 7 minutes?

D) What does the probability you found in part (B) mean?

6. Consider the experiment where in order to complete the experiment once you have to first flip a single coin then spin a spinner with 5 equal sections labeled 1-5.

A) What is the sample space?

B) Define a random variable on this experiment.