Math 110 Name_____

Quiz 5

Every answer must be fully justified. Show your work!!! Your answers may include factorials if appropriate, but do not leave expressions like ${}_{200}P_{50}$ or ${}_{200}C_{50}$.

1. Suppose that a 6-sided die is rolled 3 times.

   (a) What is the probability that all three numbers rolled are even?

   (b) What is the probability that at least one odd number is rolled?

2. For this problem assume that in Illinois license plates have to be made up of 2 letters followed by 4 digits (for example, HF 2335 or AA 0679).

   (a) What is the probability that a randomly chosen license plate begins with A and has no zeroes in it?

   (b) What is the probability that a randomly chosen license plate is JB 6332?

3. Suppose that a movie theater has 30 classic movies available for a special All-night Classic Marathon, during which it will show 10 of these classic movies. Casablanca is one of the movies available.

   (a) What is the probability that Casablanca will be shown first during this marathon?

   (b) What is the probability that Casablanca will be shown during this marathon?

4. Suppose the following game is proposed to you: You pay \$1 to play the game (which is <u>not</u> returned to you if you win). You draw a card from a deck of 52 cards. If you draw an Ace you win \$10. If you draw a 10, Jack, Queen or King, you win \$2. If you draw the 2 of clubs, you win \$20. Determine your expected value for this game.