Pre-Cal CW 8.3-8.6 Series, Binomial Expansion, and Probability

1. Evaluate:

$$\sum_{n=1}^{\infty} 7(0.5)^{n-1}$$

2. Use the Binomial Theorem, to expand and simplify the following complex number:

$$(2-i)^5$$

3. Find the 4th term of the following:

$$(2x-3y)^7$$

4. How many six-digit numbers can be formed if the leading digit cannot be a zero and the last number cannot be 1?

5. A baseball manager is determining the batting order for the team. The team has 9 players, but the manager wants the pitcher to bat last. How many batting orders are possible?

6. In how many distinguishable ways can the letters in BOOKKEEPER be written?

7. 10 students are competing in an event. The top 6 will move on to the next round and will be given an advantage according to how they finish in round 1. Find in how many different ways this is possible.

8. From a standard deck of cards, find the probability of picking 2 cards; the first being a face card, then a spade. (Provided you put the first card back)

9. From a standard deck of cards, what is the probability of picking a face card or a red card?

10. From a standard deck of cards, what is the probability of picking a heart or a club (clover)?

11. 5 red marbles, 4 blue marbles, and 3 green marbles are all placed in a bag. You are to choose 3 marbles. What is the probability that all 3 marbles chosen are red? (Assume that when a marble is chosen, it is not placed back in the bag)