Honors Pre-Calc Quiz 9.5 – 9.7 2017

Short Answer

1. Given $(2x - 5y)^9$, find a for the term ax^4y^5

2. Find the 12^{th} term in the expansion of $(\frac{2}{x} - 3y)^{20}$

3. If you have a \$1 bill, a \$5, a \$10, a \$20, and a \$50, how many different positive sums of money can you make using two or more of these bills

4. Consider 4-digit numbers…
   a) How many 4-digit numbers can be formed if the leading digit cannot be odd and the number must be a multiple of five

   b) How many 4-digit numbers contain at least one three and one seven?

5. How many distinguishable permutations are there of "Tallahassee" given that they must start with a *T* and end with an *e*?

6. Solve for n: $5 * {}_{n-1}P_1 = {}_nP_2$

7. If ten people eat dinner together, in how many ways may four order chicken, four order steak, and two order pizza?

8. Three integers from 1 through 40 are chosen at random. What is the probability that…
   a) All three are even.

   b) At least one is odd.

   c) Of the first two numbers, one is even and the other is odd, and the last is even

9. A shipment of 100 microwaves contains 25 defective units. A vending company orders 20, and since each are individually packaged, selection is random. What are the probabilities that…
   a) Exactly 18 units are good.

   b) At least two units are good.

10. Assume you have a standard deck of playing cards. Remove all the fives and add a fifth Highlander suit. Find the probability of these poker hands:
    a) Full house

    b) Flush

    c) Straight

11. In how many ways can 10 people line up to get on a bus if two people refuse to stand next to each other?

12. Six boys and their six girlfriends go to the movies together.
    a) How many ways can they be arranged if they sis together as couples in a row?

    b) How many ways can they be arranged if they sit together in a row if they alternate by boy/girl?

13. A television director is scheduling a certain sponsor's commercials for an upcoming broadcast. Seven slots are available. In how many ways can the commercials be scheduled…
    a) If the sponsor has two different commercials, one to be shown four times and the other to be shown three times?

    b) If there are four commercials to be shown twice, once, once, and three times respectively?

14. The quiz bowl team consists of four Seniors, five Juniors, and two Sophomores. In how many ways can the team be seated if a Senior must be seated at each end?

15. The lock on Mr. Lamkin's briefcase has four dials with numbers from 0 to 9. Mr. Lamkin doesn't remember any of his combination numbers, but he remembers that exactly two of them are the same. If he can try one possibility every 10 seconds, what is the maximum amount of time it will take Mr. Lamkin to open his briefcase?