Math 240, Quiz 8

Name:

Circle One: T 12:05 T 2:25 R 12:05 R 2:25

Instructions: Answer all questions fully, showing work where necessary.

1) What is the coefficient of x^8y^9 in the expansion of $(3x + 2y)^{17}$?

It'll be $\binom{17}{8}3^8 2^9$

2) How many solutions are there to the equation $x_1+x_2+x_3+x_4+x_5+x_6 = 29$ where $x_i, i = 1, 2, 3, 4, 5, 6$, is a nonnegative integer such that $x_i > 1$ for $i = 1, 2, 3, 4, 5, 6$?

If each x_i is at least 2, we can subtract 12 stars from the 29 we have to place. Thus, we will only have 17 stars and 5 bars to place. The answer will thus be $\binom{22}{5}$.

3) What is the probability that a five-card poker hand contains cards of five different kinds (that is, there are no pairs among the five cards)? There are 13 different kinds of cards, 2 through Ace. Out of those 13, we must choose 5. For each of these 5 cards, there are 4 suits, and we must choose one. Thus, the probability is $\frac{\binom{13}{5}\binom{4}{1}^5}{\binom{52}{5}}$

I messed up and rewrote the same bonus question. The answer is again Alando Tucker.