on avg.

5: (7 pts.) A block of uranium ore generates 60 clicks per hour on a geiger counter sitting next to it. Let Y be the number of clicks it generates in the next 10 minutes. Derive an expression for $P(Y \leq 2)$ but do not evaluate/simplify it to a decimal fraction.

$\lambda = \frac{60 \text{ clicks}}{60 \text{ mins}} \cdot 10 \text{ mins} = 10 \text{ clicks}$ } 2

$P(Y \leq 2) = P(Y=0) + P(Y=1) + P(Y=2)$ } 2

$= e^{-10}\frac{10^0}{0!} + e^{-10}\frac{10^1}{1!} + e^{-10}\frac{10^2}{2!}$ } 3

$= e^{-10}\left[1 + 10 + 50\right]$

6: (4 pts.) Jenny feels lucky today and decides to keep buying scratch off lottery tickets until she gets a winner. If the probability that any given ticket is a winner is 0.2, what's the probability that she doesn't get a winning ticket until she purchases her 8th ticket? Derive an expression for this probability but do not evaluate/simplify it to a decimal fraction.

$P(\text{1st win on 8th ticket}) = (0.8)^7(0.2)$