

Math 107. Homework #4. Solutions.

6.10. In this case $n = 7$, $p = 0.90$, and $x = 7$, so the answer is
 $f(7) = (0.9)^7 \sim 0.478$.

6.14. (a) $0.246 + 0.205 + 0.117 + 0.044 + 0.010 + 0.001 = 0.623$;
(b) $0.001 + 0.010 + 0.044 + 0.117 + 0.205 + 0.246 = 0.623$;
(c) $0.205 + 0.246 + 0.205 = 0.656$.

6.28. (a) $\frac{\binom{7}{3}\binom{5}{3}}{\binom{12}{6}} = \frac{350}{924} \sim 0.379$;

(b) $\frac{\binom{7}{5}\binom{5}{1}}{\binom{12}{6}} = \frac{105}{924} \sim 0.114$.

6.42. Using Poisson approximation with $\lambda = np = 2.1$ we get

$$f(3) = \frac{\lambda^3}{3!} e^{-\lambda} = \frac{(2.1)^3}{6} e^{-2.1} \sim 0.188.$$

6.48. Since

$$f(0) = \frac{\lambda^0}{0!} e^{-\lambda} = e^{-\lambda} = e^{-3.4} \sim 0.033,$$

$$f(1) = \frac{\lambda^1}{1!} e^{-\lambda} = \lambda \cdot e^{-\lambda} = 3.4 \cdot e^{-3.4} \sim 0.113,$$

the answer is $1 - (f(0) + f(1)) \sim 1 - 0.033 - 0.113 = 0.855$.