

Homework 1.4: [530]

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Exercise 2.60 (a) $12 * \frac{1}{11} \mu = 1.091$

Exercise 2.60 (b) $\binom{n}{k} * p^k * (1 - p)^{n-k}$ $k=2$, $p = \frac{1}{11}$ $P(k=2) = .2105$

Exercise 2.60 (c) $p=.2$ $P(k=2) = .2835$

Exercise 2.62 (a) $\binom{2}{X} * \binom{48}{3-X} / \binom{50}{3}$

Exercise 2.62 (b) $P(X=0) = .8824$

Exercise 2.62 (c) $p = .04$ $P(X = 0) = \binom{3}{0} * .04^0 * .96^3$ $P(X = 0) = .8847$

Exercise 2.64 (a) $P(X = x) = \binom{200}{x} * p^x * (1 - p)^{200-x}$ $p = .05$ $P(X \geq 5) = 1 - P(X < 5) = 1 - \sum_{n=0}^4 P(X = n)$
 $P(x \geq 5) = .9736$

Exercise 2.64 (b) $p \rightarrow 0$ as $n \rightarrow \infty$ $x \rightarrow P(m = np)$ $m = 10$ $1 - P(x \leq 5) = .9707$

Exercise 2.72 (a) $P(x \leq 10) = P(10|y=15) + P(35|y=65) = (15-10)/75 + (65-35)/75 = 7/15$

Exercise 2.72 (b) $P(x_i \leq 20) = P(45 \leq y \leq 55) = 10/75 = 2/15$

Exercise 2.72 (c) $P(x_i = 10 - y_i | 20) = P(35 \leq y_i \leq 65 | 20) = 6/11$

Exercise 2.74 (a) $.5 = 1 - e^{-\lambda t}$ $.5 = e^{-\lambda t}$ $\frac{1}{\lambda} = 10000$ $t = 6931.50$

Exercise 2.74 (b) $e^{-1000/10000} = .9048$

Memoryless \Rightarrow .9048