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) $p \to 0$ as $n \to \infty$ $x \to P(m = np)$ $m = 10$ 1-P(x ¡ 5)= .9707

Exercise 2.72 (a) P(x ¿10) =P(10¡y¡15)+P(35¡y¡65)= (15-10)/75+(65-35)/75 = 7/15

Exercise 2.72 (b) P(x¿ 20) = P(45 ¡ y ¡ 55)= 10/75 = 2/15

Exercise 2.72 (c) P(x¿ 10— y ¿ 20) = P(35 ¡ y¡ 65—y¿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 $\implies$ .9048