Probability and Statistics
Assignment 4

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→ Problem 1

a) $P(x>5) = \int_5^\infty \lambda e^{-\lambda x} dx$

$= \lambda \left[e^{-\lambda x} \cdot \frac{1}{-\lambda} \right]_5^\infty$

$= -1 \left[\frac{1}{e^\infty} - \frac{1}{e^{5\lambda}} \right]$

$= \frac{1}{e^{5\lambda}} - 0$

$= \frac{1}{e^{5\lambda}}$

→ Problem 3

pmf of X is

$$F_X(x) = \begin{cases} 1/5 ; & a = 0 \\ 1/5 ; & a = 2 \\ 3/5 ; & a = 4 \end{cases}$$

→ Problem 4

Cdf $F_x(x) = \int_0^x \lambda e^{-\lambda x} dx = 1 - e^{-\lambda x}$