

# M 362K Pre-Class Work for 3/10

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## 4-56

$$Pr(X = 0) = e^{-\lambda} \frac{\lambda^0}{0!} = e^{-\lambda}$$

$$\therefore E[X] = \lambda = -\ln(0.001007785) \approx 6.9$$

## 4-63

(a)

From the question, we can know that  $\lambda = 2.5$

$$\therefore Pr(T = t) = e^{-2.5} \frac{2.5^t}{t!}$$

(b)

The mode occurs at  $T = 2$

(c)

$$Var[T] = \lambda = 2.5$$

## 4-72

We know that  $\lambda = \frac{1}{30}$

Let  $S$  denote the number of times Jack E. swear

$$\therefore Pr(S = 2) = e^{-\frac{1}{30}} \frac{\left(\frac{1}{30}\right)^2}{2!} = 5.37 * 10^{-4}$$