Hints for Section Assignment 9

- **Exercise 1.4** If $Y \sim P(\mu)$, then $V[Y] = E[Y^2] - (E[Y])^2 = \mu$.

- **Exercise 1.5** They want you to use a continuous version of the Law of Total Probability. Start with

$$Pr\{X = x\} = \int_0^\infty Pr\{X = x | L = \lambda\} f_L(\lambda) d\lambda \,.$$

  Recognize this integral as proportional to the integral of a Gamma density. Supply the proportionality constant and you're done.

- **Problem 1.6** See Exercise 1.3.

- **Problem 1.7** Use the Law of Total Probability, conditioning on the number of shocks. Answer is $e^{-\lambda t(1-\alpha)}$.

- **Problem 1.11** Let T denote the waiting time. To get the density of T, differentiate $Pr\{T \leq t\} = Pr\{X(t) \geq k\}$. Use the product rule.