Homework 5

Problem of the week. Assuming that the weekly demand for the video recorder is a Poisson variable with mean 3, find the probability that the shop sells at least 3 in a week.

Solution Let X be the number of recorders that are sold per week, so X is Poisson distributed with mean $\lambda = 3$.

$$\begin{aligned} P(X \geq 3) &= 1 - P(X \leq 2) \\ &= 1 - \left(e^{-3} + 3e^{-3} + \frac{3^2 e^{-3}}{2!} \right) \\ &= 1 - e^{-3}(1 + 3 + 4.5) = 1 - 8.5e^{-1.2} = 0.5768. \end{aligned}$$

This problem is similar, for example, to the practice problems 3.27–3.29 in Chapter 3 of MB.