1. Section 7.1, # 6.

2. Section 7.3, # 6.

3. A physics experiment involves calibrating a pair of light sources using a photodetector. When turned on, each light source emits photons which hit the photodetector. The flow of photons from each source can be modeled as a Poisson process. The average emission rate for the green light source is 2000 photons per second, while that for the blue light source is 5000 photons per second.

The experiment begins with one of the light sources being switched on at random.

(a) Given that no photons hit the photodetector during the first 5 milliseconds of the experiment, what is the conditional probability that the green light source was switched on?

(b) What is the probability that the time between the eighth and ninth photons hitting the photodetector is at least 1 millisecond?

4. Section 7.2, # 16.

5. Section 7.2, # 18.

6. Section 7.2, # 27. (Use the normal approximation to the binomial distribution.)