

**CS 333202: Probability and Statistics**  
**HW6 Part II**

1. A purchaser of electrical components buys them in lots of size 10. It is his policy to inspect 3 components randomly from a lot and to accept the lot only if all 3 are nondefective. If 30 percent of the lots have 4 defective components and 70 percent have only 1, what proportion of lots does the purchaser reject?
2. When a certain car breaks down, the time that it takes to fix it (in hours) is a random variable with the density function

$$f(x) = \begin{cases} ce^{-3x} & \text{if } 0 \leq x < \infty \\ 0 & \text{otherwise} \end{cases}$$

- (a) Calculate the value of  $c$ .
  - (b) Find the probability that when this car breaks down, it takes at most 30 minutes to fix it.
3. The distribution function for the duration of a certain soap opera (in tens of hours) is

$$F(x) = \begin{cases} 1 - \frac{16}{x^2} & x \geq 4 \\ 0 & x < 4 \end{cases}$$

- (a) Calculate  $f$ , the probability density function of the soap opera.
  - (b) What is the probability that the soap opera takes at most 50 hours? At least 60 hours? Between 50 and 70 hours? Between 10 and 35 hours?