

Homework 7: The pdf and cdf

- §3.2, #4, 8
- §3.3, #2
- The probability density function of X , the lifetime of a certain electronic device (measured in hours), is given by

$$f_X(x) = \begin{cases} \frac{10}{x^2}, & x > 10 \\ 0, & x \leq 10 \end{cases}$$

- Find $P(X > 20)$ using the pdf.
 - Find and sketch $F_X(x)$.
 - Find $P(X > 20)$ using the cdf.
 - What is the probability that of 6 such devices at least 3 will function for at least 15 hours? What assumptions are you making?
- A continuous random variable X has cdf given by

$$F_X(x) = \begin{cases} 0, & x \leq 0 \\ \frac{1}{9}x^2, & 0 < x \leq 3 \\ 1, & x > 3 \end{cases}$$

- Find and sketch $f_X(x)$.
- Find $P(1 < X \leq 2)$ by using the cdf.