

Warm-up Problems - April 10, 2006

Extra Credit?

(If my signature is here write down your name turn it in for extra credit. No signature? Arrive earlier!)

1. For the probability density function

$$f(x) = \begin{cases} \frac{3}{8}x^2 & \text{if } 0 \leq x \leq 2 \\ 0 & \text{otherwise} \end{cases}$$

(a) $P(0 < X < 1) =$

(b) $P(X > 1) =$

(c) Find the value m such that $P(X > m) = \frac{1}{2}$.
(This is called the median of the distribution.)

2. For the probability density function

$$f(x) = \begin{cases} \frac{1}{10}e^{-x/10} & \text{if } x \geq 0 \\ 0 & \text{otherwise} \end{cases}$$

(a) $P(0 < X < 1) =$

(b) $P(X > 1) =$

(c) Find the value m such that $P(X > m) = \frac{1}{2}$.
(This is called the median of the distribution.)

Lecture Problems

3. A continuous random variable has cumulative distribution function:

$$F(x) = \begin{cases} 0 & \text{if } x < 0 \\ \frac{1}{4}x^2 & \text{if } 0 \leq x \leq 2 \\ 1 & \text{if } x > 2 \end{cases}$$

Use this to find:

- (a) $P(X < 1) =$
- (b) $P(X > 1) =$
- (c) $P(X < 3/4) =$
- (d) $P(X > 3/4) =$
- (e) $P(1/2 < X < 1) =$
- (f) Find $f(x)$, the probability density function.

4. Repeat Problem 3 for the cumulative distribution function:

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

5. Give the pdf's below, the find corresponding cdf.

- (a)

$$f(x) = \begin{cases} \frac{1}{2} & \text{if } 0 \leq x \leq 2 \\ 0 & \text{otherwise} \end{cases}$$

- (b)

$$f(x) = \begin{cases} \frac{1}{2} & \text{if } 1 \leq x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$