

ST521 Review Session 2, Fall 2009

1. Old homework 1.1
2. Old homework 1.27
3. Let the pdf $f(x)$ be positive on and only on the non-negative integers. Suppose that

$$f(x) = \frac{4}{x} f(x-1), \text{ for } x = 1, 2, \dots$$

Find $f(x)$.

4. Let X be a continuous random variable with the density function

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

Define $Y=X^2$ and find its density function.

5. The random variable X has density

$$f(x) = xe^{-x}, x > 0.$$

Find the density of $Y=X^3$.

6. X is a continuous random variable with pdf given by

$$f(x) = c(8-x), \text{ for } -1 < x < 8.$$

Find c and compute the cdf.

7. X is a continuous random variable with pdf given by

$$f(x) = cx^2, \text{ for } -1 < x < 1.$$

Find c and compute the cdf.