

Worksheet 12

MATH 16B GSI:TAO SU TU 11/28/2017

1. Find the expected values and variances of the random variables with the given density functions (You may use the formulas in §12.4).

(a) $f(x) = 3e^{-3x}$

(b) $f(x) = \frac{1}{5\sqrt{2\pi}}e^{-\frac{1}{2}\left(\frac{x-3}{5}\right)^2}$

2. On a typical weekend evening at a local hospital, the number of persons waiting for treatment in the emergency room is Poisson distributed with $\lambda = 6.5$.

(a) What is the likelihood that either no one or only one person is waiting for treatment?

(b) What is the likelihood that at least five persons are waiting?

3. Suppose the possible values of the discrete random variable X range over the nonnegative integers and the associated probabilities are given by $p_n = \Pr(X = n) = \frac{6^n}{7^{n+1}}$ ($n = 0, 1, 2, \dots$). Compute $\Pr(X \text{ is even})$.