

Math 30530, Probability

Quiz 4, Wednesday April 3

Name:

1. This question concerns a random variable X that is Exponential with parameter 4.

(a) Write down the density function of X .

(b) Find that number x^* such that $P(X \leq x^*) = \frac{1}{2}$ (so also, $P(X \geq x^*) = \frac{1}{2}$ — this number x^* is called the *median* of X).

(c) Are x^* and $E(X)$ the same?

2. A random variable Y that models choosing a random number between 0 and 2, that favours numbers that are closer to 1, has density

$$f(x) = \begin{cases} 0 & \text{if } x < 0 \text{ or } x > 2 \\ cx(2-x) & \text{if } 0 \leq x \leq 2. \end{cases}$$

(a) What is c ?

(b) What is the expected value of X ?