

## Answer on Question #80503 – Math – Statistics and Probability

### Question

Suppose that a large conference room at a certain company can be reserved for no more than 4 hours. Both long and short conferences occur quite often. In fact, it can be assumed that the length  $X$  of a conference has a uniform distribution on the interval  $[0, 4]$ .

(i) What is the probability density function?

(ii) What is the probability that any given conference lasts at least 3 hours?

### Solution

(i) What is the probability density function?

$$f(x) = \begin{cases} \frac{1}{4}; & 0 \leq x \leq 4 \\ 0; & x < 0 \text{ or } x > 4 \end{cases}$$

(ii) What is the probability that any given conference lasts at least 3 hours?

$$P(X \geq 3) = \int_3^4 \frac{1}{4} dx = \frac{1}{4}(4 - 3) = \frac{1}{4}$$

**Answer:**

$$f(x) = \begin{cases} \frac{1}{4}; & 0 \leq x \leq 4, \\ 0; & x < 0 \text{ or } x > 4; \end{cases}$$

the probability that any given conference lasts at least 3 hours is 0.25.