Uniform Distribution over an interval [a, b]:



For Uniform distribution,

$$P(c \le X \le d) = \frac{d-c}{b-a}, \qquad a \le c \le d \le b.$$
$$E(X) = \frac{a+b}{2}, \qquad Var(X) = \frac{(b-a)^2}{12}.$$

Exponential Distribution:



- **1.** Suppose the lifetime of a particular brand of light bulbs is exponentially distributed with mean of 400 hours.
- a) Find the probability that a randomly selected light bulb would last over 500 hours.

b) Find the probability that 3 out of 7 randomly selected light bulbs would last over 500 hours.

c) Find the probability that a randomly selected light bulb would last between 300 hours and 800 hours.