

1016-345-01
Probability and Statistics for Engineers

In-class exercise

2013 March 21

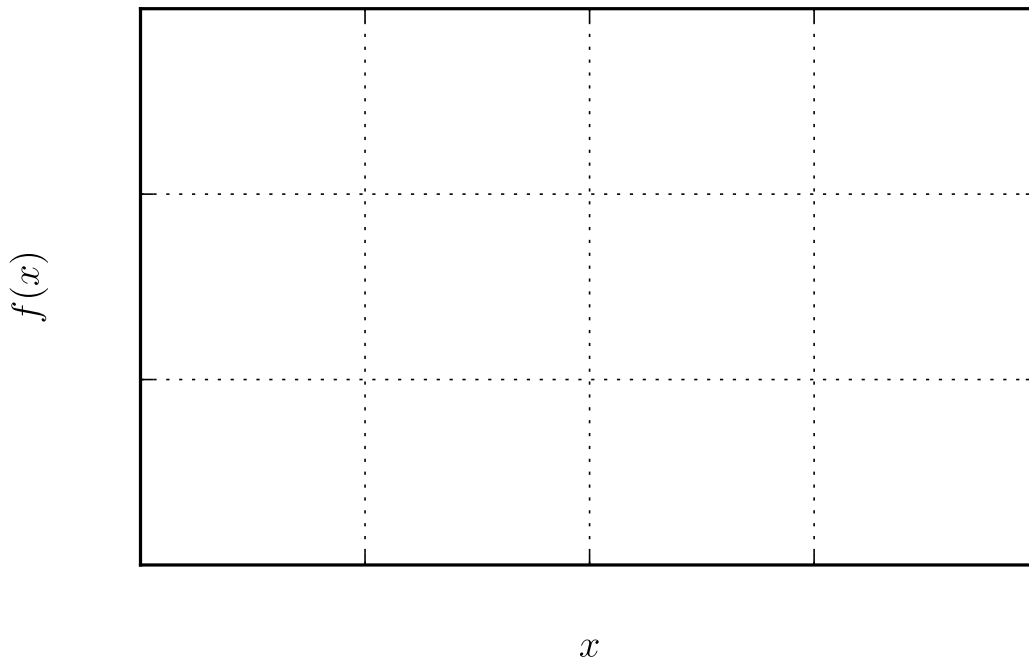
Consider a continuous random variable X with the uniform probability density function

$$f(x) = \begin{cases} \frac{1}{B-A} & A < x < B \\ 0 & \text{otherwise} \end{cases}$$

a. Verify that $f(x)$ is normalized, i.e., that

$$\int_{-\infty}^{\infty} f(x) dx = 1$$

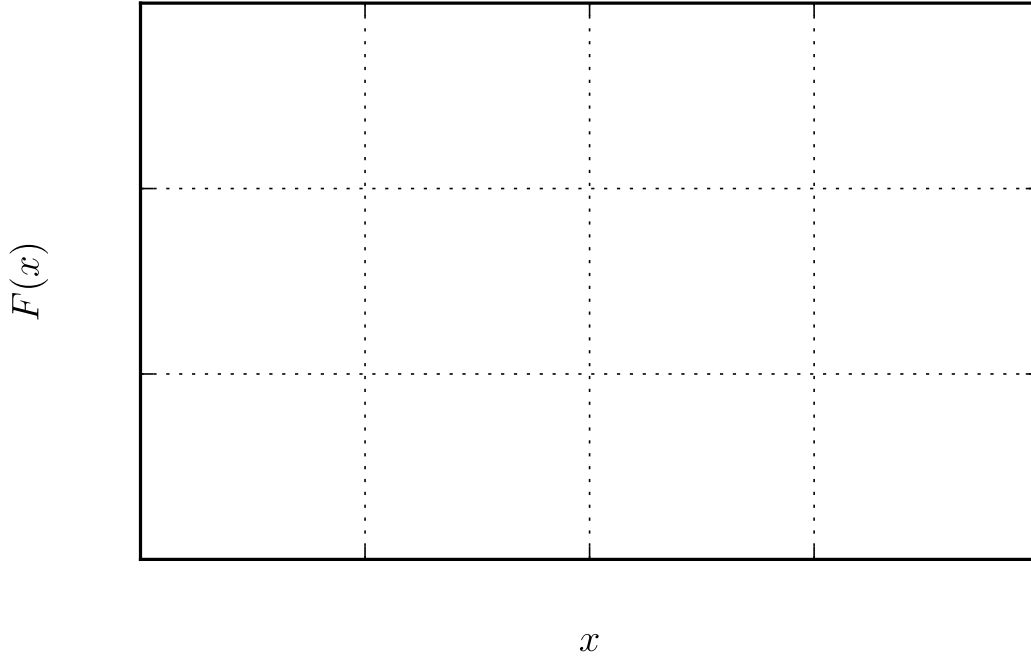
b. Sketch the graph of $f(x)$. Label the axes.



Consider a continuous random variable with the uniform probability density function

$$f(x) = \begin{cases} \frac{1}{B-A} & A < x < B \\ 0 & \text{otherwise} \end{cases}$$

- c. Find the cumulative distribution $F(x)$.
- d. Sketch the graph of $F(x)$. Label the axes.



- e. Calculate the expected value $E(X)$ in terms of A and B .
- f. Calculate the variance $V(X)$ in terms of A and B .