

Continuous Uniform - Probability Between X-Values

Problem Setup: Your friend was waiting for you at the bus stop and just texted that you JUST missed the bus. You are hoping to join them to watch a movie. If you can catch a bus in the next 10 minutes, you will make it to the movie on time.

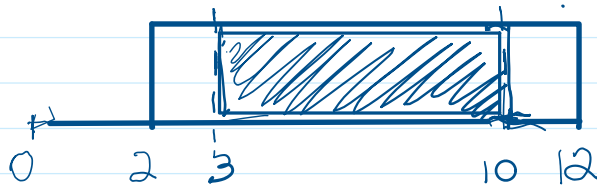
- It takes you 2 minutes to pack up your stuff.
- It takes 1 minute to run to the bus stop.
- The times between busses are between 2 and 12 minutes
- The times follow a continuous uniform distribution

$$P(x_1 \leq x \leq x_2) = \frac{x_2 - x_1}{b - a}$$

$$a = 2 \quad b = 12$$

Question: What is the probability of making it to the movie on time?

Solution:



$$x_1 = 3$$

$$x_2 = 10$$

$$P(3 \leq x \leq 10) = \frac{10 - 3}{12 - 2} = \frac{7}{10} = 0.7 \rightarrow 70\%$$