- **Both**
- **Neither**

Submit

1

0 points possible (ungraded)
The height of the probability density function of a uniformly distributed random variable is inversely proportional to the width of the interval it is distributed over.

- (selected) True ✔
- False

Explanation
Recall that $\int_{-\infty}^{\infty} f_X(x)\, dx = 1$, which means the area under the pdf is one. For uniform distribution, it becomes the area of a rectangle, which is 1. Hence the height is inversely proportional to the width.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

2

0/1 point (graded)
The variance of a uniformly distributed random variable on $[a, b]$ is

- $(b-a)/2$
- (selected) $(b-a)/6$ ✖
- $(b-a)^2/6$

- $(b-a)^2/12$ ✔

Answer
Incorrect: Video: Uniform Distribution

Explanation

The expectation of a uniformly distributed random variable X on $[a, b]$ is $E(X) = \frac{a+b}{2}$.

Its varaince is $V(X) = \int_a^b \left(x - \frac{a+b}{2}\right)^2 \frac{1}{b-a} dx = (b-a)^2/12$

Submit You have used 2 of 2 attempts

Answers are displayed within the problem

3 Max v. min

3.0/3.0 points (graded)
Let $X, Y \sim U_{[0,1]}$ independently. Find $P(\max(X, Y) \geq 0.8 \mid \min(X, Y) = 0.5)$

0.4 ✔ **Answer:** 0.4

0.4

Explanation
Conditioning on $\min(X, Y) = 0.5$ restricts our focus to the L-shaped line from $(1, 0.5)$ to $(0.5, 0.5)$ to $(0.5, 1)$ whose total length is $0.5 + 0.5 = 1$, and the distribution over that line is uniform.
Within this line, $\max(X, Y) \geq 0.8$ forms the segments from $(0.8, 0.5)$ to $(1, 0.5)$ and from $(0.5, 0.8)$ to
$(0.5, 1)$ whose total length is $0.2 + 0.2 = 0.4$
The probability of falling within these segments given the L-shaped line is $0.4/1 = 0.4$.

Submit You have used 1 of 4 attempts

Answers are displayed within the problem