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Properties of Variance, Part I - Quiz

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Question 1

1/1 point (graded)

True or False: Variance can be positive or negative, depending on the random variable.

a. True

b. False ✔

Explanation

This is false. The first property described in class holds that the variance of any random variable must necessarily be non-negative. This can also be seen by looking at the formula for variance, $Var(X) = E[(X - \mu)^2]$, where the square term dictates that the expectation be non-negative.

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✔ Correct (1/1 point)

Question 2

1/1 point (graded)

Suppose that you have a function, $Y = 5X + 2$, and the variance of X is 2. What is the variance of Y?

50

✔ **Answer:** 50

50

Explanation

We know from the properties of variance that if $Y = aX + b$, then $Var(Y) = a^2 Var(X)$. So, if $Y = 5X + 3$ and $Var(X) = 2$, then $Var(Y) = 5^2 * Var(X) = 25 * 2 = 50.$

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