4. Exercise: Variance properties

Exercises due Feb 28, 2020 05:29 IST *Completed*

Exercise: Variance properties

1/1 point (graded)

Is it always true that $\mathbf{E}\left[X^2\right] \geq \left(\mathbf{E}\left[X\right]\right)^2$?

Yes ✔ **Answer:** Yes

Solution:

We know that variances are always nonnegative and that $\mathsf{Var}\left(X\right) = \mathbf{E}\left[X^2\right] - \left(\mathbf{E}\left[X\right]\right)^2$. Therefore, $0 \leq \mathsf{Var}\left(X\right) = \mathbf{E}\left[X^2\right] - \left(\mathbf{E}\left[X\right]\right)^2$, or, equivalently, $\mathbf{E}\left[X^2\right] \geq \left(\mathbf{E}\left[X\right]\right)^2$.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

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HINT 1

I actually solved this question intuitively 1) Prof mentioned that Var cannot be negative. 2) The expectati...

Hint with a question 8

X^2 is not linear then, and we know that E[X^2] is not equal to (E[X])^2. The question says "Always True"

What about decimal fractions?

What about decimal fractions? If we rise them to the power they will be lower 1/2^2=1/4 so thus the pro...

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