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Bookmark

Exercise: Markov inequality

(1/1 point)

Let Z be a nonnegative random variable that satisfies $\mathbf{E}[Z^4] = 4$. Apply the Markov inequality to the random variable Z^4 to find the tightest possible (given the available information) upper bound on $\mathbf{P}(Z \geq 2)$.

$\mathbf{P}(Z \geq 2) \leq$



Answer: 0.25

Answer:
We have

$$\mathbf{P}(Z \geq 2) = \mathbf{P}(Z^4 \geq 16) \leq \frac{\mathbf{E}[Z^4]}{16} = \frac{4}{16} = \frac{1}{4}.$$

You have used 1 of 2 submissions

▼ Unit 8: Limit theorems and classical statistics

Unit overview

Lec. 18: Inequalities, convergence, and the Weak Law of Large Numbers

Exercises 18 due Apr
27, 2016 at 23:59 UTC

Lec. 19: The Central Limit Theorem (CLT)

Exercises 19 due Apr
27, 2016 at 23:59 UTC

Lec. 20: An introduction to classical statistics

Exercises 20 due Apr
27, 2016 at 23:59 UTC

Solved problems

Additional theoretical material

Problem Set 8

Problem Set 8 due Apr
27, 2016 at 23:59 UTC

Unit summary

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