19. Exercise: The expected value rule

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

Exercise: The expected value rule

2.0/2.0 points (graded)

Let X be a uniform random variable on the range $\{-1, 0, 1, 2\}$. Let $Y = X^4$. Use the expected value rule to calculate $\mathbf{E}[Y]$.

$\mathbf{E}[Y] =$ 4.5 ✔ **Answer:** 4.5

Solution:

We are dealing with $Y = g(X)$, where g is the function defined by $g(x) = x^4$. Thus,

$$\mathbf{E}[Y] = \mathbf{E}[X^4] = \sum_x x^4 p_X(x) = (-1)^4 \cdot \frac{1}{4} + 0^4 \cdot \frac{1}{4} + 1^4 \cdot \frac{1}{4} + 2^4 \cdot \frac{1}{4} = \frac{1}{4} + \frac{1}{4} + \frac{16}{4} = 4.5.$$

Submit You have used 2 of 3 attempts

Answers are displayed within the problem

Discussion

Hide Discussion

Topic: Unit 4: Discrete random variables:Lec. 5: Probability mass functions and expectations / 19. Exercise: The expected value rule

Show all posts by recent activity

Be careful with parentheses if you are using Wolfram 4

Be careful with parentheses if you are using Wolfram. Put them everywhere :)

? Why define X over a "range"? 3

Hint - UNIFORM random variable

Pay attention to "uniform random Variable" what does indicate about PMF of PX(x), once you figure this out its simple t...

4

Guessing Probabilities

Rather than guess probabilities because none were provided I left them out. I was loathe to assume anything but ultim...

2

How do i solve this quizz?

Just refer to the uniform distribution of random variable at lecture "**Expectation**" ;)

6

★ Following