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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 $\mathbf{E}[Y]$.

$\mathbf{E}[Y] =$ ✓ Answer: 4.5

Solution:

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

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

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You have used 2 of 3 attempts

i Answers are displayed within the problem

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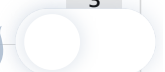


[Be careful with parentheses if you are using Wolfram](#)
[Be careful with parentheses if you are using Wolfram. Put them everywhere.:](#)

4

[Why define X over a "range"?](#)

3



💬 Hint - UNIFORM random variable

4

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

💬 Guessing Probabilities

2

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

💬 How do i solve this quizz?

6

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

★ Following

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