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Exercise: The expected value rule

(2/2 points)

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

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

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

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