Topic: Even, odd, or neither

Question: Is the function even, odd, or neither?

$$f(x) = 2x^3 - x^7$$

Answer choices:

A Even

B Odd

C Neither

Solution: B

A function is even if $f(x) = f(-x)$, odd if $f(-x) = -f(x)$ and neither if $f(-x) \neq f(x)$ and $f(-x) \neq -f(x)$. So to classify the given function, we'll substitute $-x$ into the function and then simplify the result.

Given

$$f(x) = 2x^3 - x^7$$

we get

$$f(-x) = 2(-x)^3 - (-x)^7$$

$$f(-x) = -2x^3 + x^7$$

$$f(-x) = -\left(2x^3 - x^7\right)$$

This function is odd because $f(-x) = -f(x)$.

Topic: Even, odd, or neither

Question: Is the function even, odd, or neither?

$$f(x) = 5x^2 - 2x^3$$

Answer choices:

A Even

B Odd

C Neither

Solution: C

A function is even if $f(x) = f(-x)$, odd if $f(-x) = -f(x)$ and neither if $f(-x) \neq f(x)$ and $f(-x) \neq -f(x)$. So to classify the given function, we'll substitute $-x$ into the function and then simplify the result.

Given

$$f(x) = 5x^2 - 2x^3$$

we get

$$f(-x) = 5(-x)^2 - 2(-x)^3$$

$$f(-x) = 5x^2 + 2x^3$$

This function is neither even nor odd because $f(-x) \neq f(x)$ and $f(-x) \neq -f(x)$.