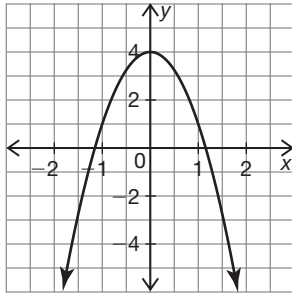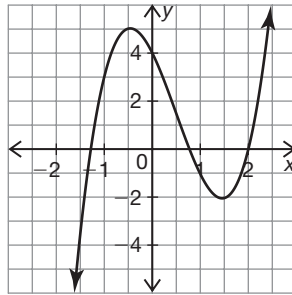**7.** State whether the graph of each function shown is even, odd, or neither.

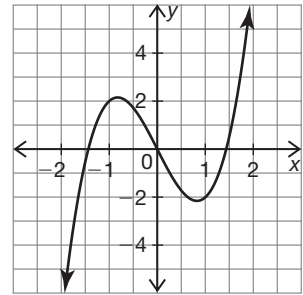**a.**

b.

c.

Odd and even functions are NOT the same as odd and even degree functions.

8. Lillian and Destiny are working on the problem shown.

Determine algebraically whether the polynomial function $f(x) = 3x^4 - 2x^3 + 4x - 6$ is even, odd, or neither.

👍 **Lillian**

$f(x) = 3x^4 - 2x^3 + 4x - 6$

$f(x) = 3x^4 - 2x^3 + 4x - 6$
$f(-x) = 3(-x)^4 - 2(-x)^3 + 4(-x) - 6$
$f(-x) = 3x^4 + 2x^3 - 4x - 6$

$-f(x) = -(3x^4 - 2x^3 + 4x - 6)$
$-f(x) = -3x^4 + 2x^3 - 4x + 6$

$f(x) \neq f(-x)$ or $-f(-x)$ thus
$f(x)$ is neither even or odd.

👎 **Destiny**

$f(x) = 3x^4 - 2x^3 + 4x - 6$

$f(x) = 3x^4 - 2x^3 + 4x - 6$
$f(-x) = 3(-x^4) - 2(-x^3) + 4(-x) - 6$
$f(-x) = -3x^4 + 2x^3 - 4x - 6$

$-f(x) = -(3x^4 - 2x^3 + 4x - 6)$
$-f(x) = -3x^4 + 2x^3 - 4x + 6$

$f(x) \neq f(-x)$ or $-f(-x)$ thus
$f(x)$ is neither even or odd.

a. Explain why Destiny's work is incorrect.

b. How can you use algebra to determine whether a function is even or odd?

5

9. Determine algebraically whether the functions are even, odd, or neither.

    a. $f(x) = 2x^3 - 3x$

> Take your time and check your substitutions.

    b. $g(x) = 6x^2 + 10$

    c. $h(x) = x^3 - 3x^2 - 2x + 7$

Be prepared to share your solutions and methods.