14.3 Even and Odd Functions (different than even/odd degree)

Even Functions

Equation: <u>All</u> terms have an even degree & <u>might</u> have a constant

Graph: Symmetry over y-axis (mirror reflection over x-axis)

★ Algebra: $f(-x) = f(x)$ get original back

Odd Functions

Equation: <u>All</u> terms have an odd degree & no constant $(+0)$

Graph: Symmetry about the origin (rotational symmetry)

★ Algebra: $f(-x) = -f(x)$ get opposite of original back

Ex #1 Determine if $f(x) = 2x^5 + 3x^3 + 7$ is even/odd/neither.

    Equation: |Neither| b/c although terms are odd degree, it has
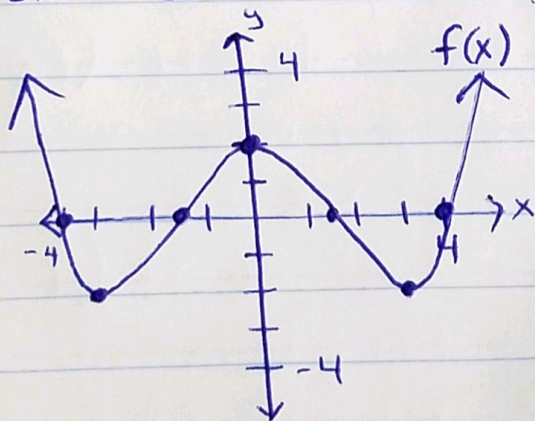   a constant.

    Graph: Don't have a graph ".

    Algebra: $f(-x) = 2(-x)^5 + 3(-x)^3 + 7$
             $= -2x^5 - 3x^3 + 7$
             $\neq f(x) \neq -f(x)$ |Neither|

Ex #2 Determine if the graph is even/odd/neither.
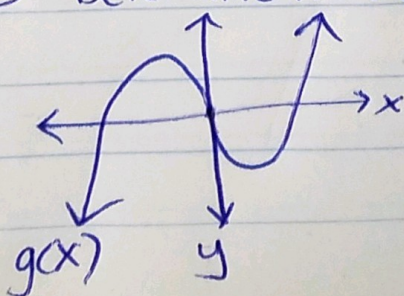

Eqn: Don't have eqn ".

Graph: |Even| b/c symmetric over y-axis.

Algebra: Don't have eqn ".

Ex #3 Determine if the graph is even/odd/neither.

|Odd| b/c we can spin it 180°
at the origin & get the same
graph (rotational symmetry).