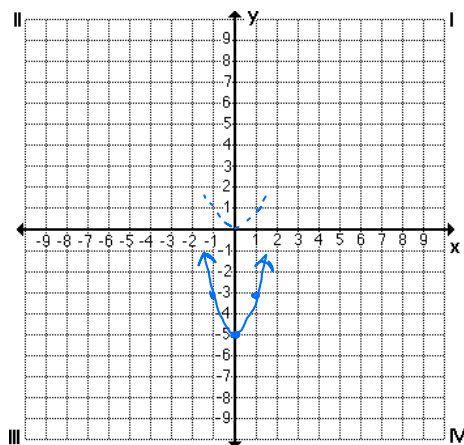


## Algebra 2 Even Functions

SHOW ALL WORK on the worksheet

Graph each function. State the domain, range, intercepts, end behavior, intervals of increase and decrease, max/min, determine any lines of symmetry, and if the function is even or not.

1.  $f(x) = 2x^2 - 5$



Domain:  $(-\infty, \infty)$

Range:  $[-5, \infty)$

x-int:  $\pm 1.58$

y-int:  $-5$

End Behavior: as  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$   
as  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$

Increase:  $(0, \infty)$

Decrease:  $(-\infty, 0)$

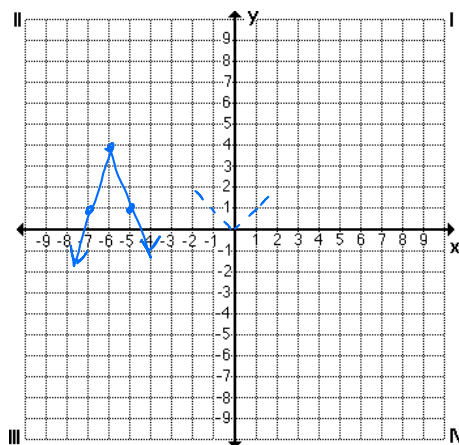
Max: None

Min: at  $(0, -5)$

Symmetry:  $x=0$

Even?: Yes

2.  $g(x) = -3|x + 6| + 4$



Domain:  $(-\infty, \infty)$

Range:  $(-\infty, 4]$

x-int:  $-\frac{14}{3}, -\frac{22}{3}$

y-int:  $-14$

End Behavior: as  $x \rightarrow \infty$ ,  $g(x) \rightarrow -\infty$   
as  $x \rightarrow -\infty$ ,  $g(x) \rightarrow -\infty$

Increase:  $(-\infty, -6)$

Decrease:  $(-6, \infty)$

Max: at  $(-6, 4)$

Min: None

Symmetry:  $x = -6$

Even?: No

Determine algebraically if each function is even or not

3.  $y = -2x^4 + 5x^2 - 4$

$$f(-x) = -2(-x)^4 + 5(-x)^2 - 4$$

$$= -2x^4 + 5x^2 - 4$$

$$= f(x)$$

Even

4.  $f(x) = \frac{1}{x}$

$$f(-x) = \frac{1}{-x} = -\frac{1}{x} = -f(x)$$

Not Even

5.  $h(x) = 4x^3 + 2$

$$h(-x) = 4(-x)^3 + 2$$

$$= -4x^3 + 2$$

$$\neq f(x)$$

Not Even

6.  $y = 5x^2 - 8$

$$f(-x) = 5(-x)^2 - 8$$

$$= 5x^2 - 8$$

$$= f(x)$$

Even