

Section 1-6  
Reflections, Absolute Values and Even/Odd Functions

**Reflection**

across y-axis

- substitute  $-x$  for  $x$  in equation or  $f(-x)$

across x-axis

- multiply whole equation by  $-1$  or  $y = -f(x)$

$$f(x) = x^2 - 8x + 17 \quad \text{where } 2 \leq x \leq 5$$

a. Write an equation for the reflection of the pre-image across the y-axis

b. Write an equation for the reflection of the pre-image across the x-axis

\*\*Any function having the property  $f(-x) = f(x)$  is called an **even function**.

$$f(x) = -x^4 + 5x^2 - 1 \quad f(-x) =$$

\*\*Any function having the property  $f(-x) = -f(x)$  is called an **odd function**.

$$f(x) = -x^3 + 6x \quad f(-x) =$$

## Absolute Value Transformations:

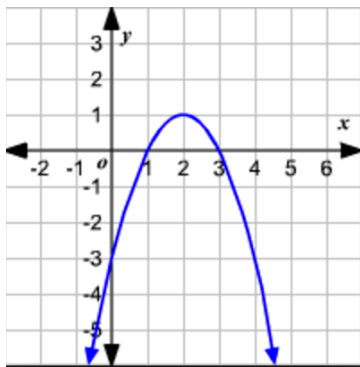
$$g(x) = |f(x)|$$

- all values below x-axis are flipped up over x-axis
- all values above x-axis remain the same on new graph

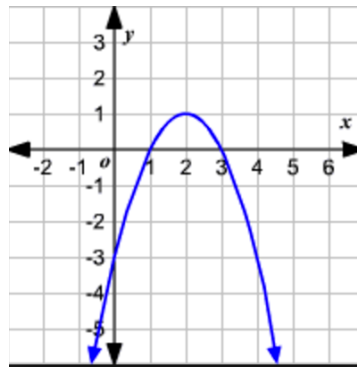
$$g(x) = f(|x|)$$

- all positive x values stay the same **and** get reflected over the y-axis
- any negative x value parts get eliminated from the new graph

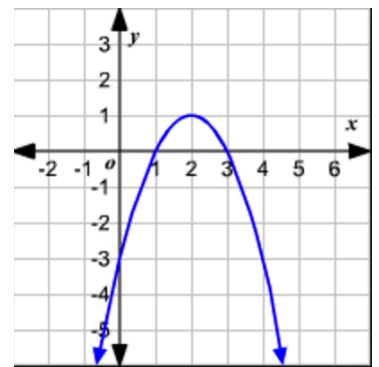
Given  $f(x)$



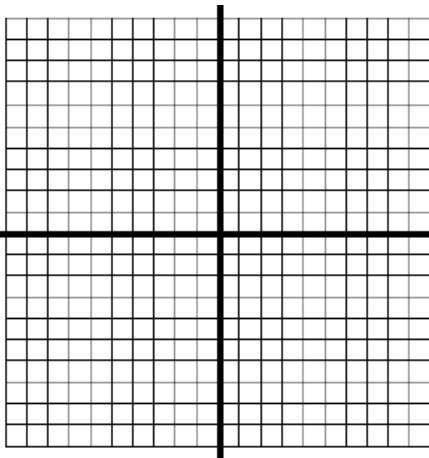
sketch  $|f(x)|$



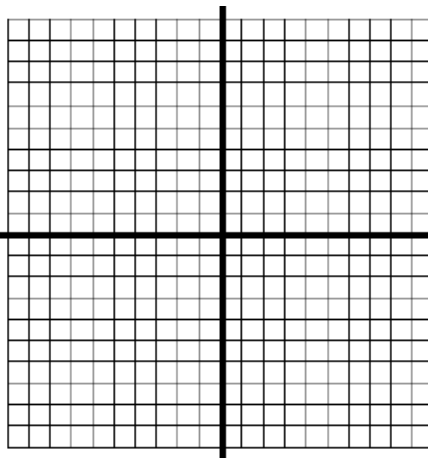
sketch  $f(|x|)$



Given  $f(x)$



sketch  $|f(x)|$



sketch  $f(|x|)$

