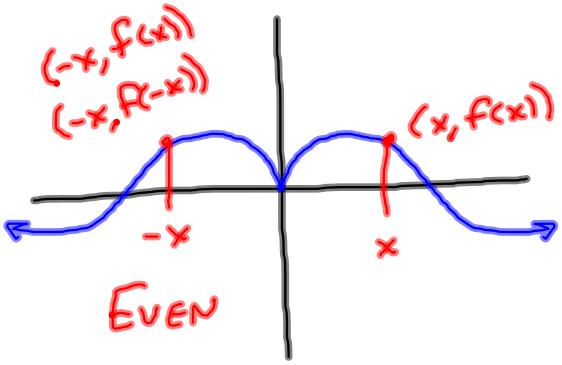


EVEN

$f(-x) = f(x)$

Symmetric about y-axis

Algebraic Take

$f(x) = x^2 + 2 \Rightarrow$

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

$= x^2 + 2 = f(x)$

Even

$f(x) = x^3 + x \Rightarrow$

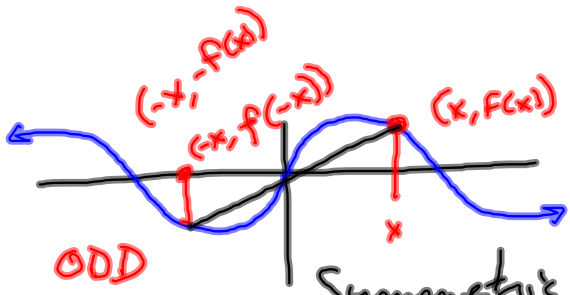
$f(-x) = (-x)^3 + (-x)$

$= -x^3 - x$

$= -(x^3 + x)$

$= -f(x)$

ODD



ODD

$f(-x) = -f(x)$

Symmetric thru origin.

$$f(x) = \frac{x^3 + x}{2 + x^2}$$

$$f(-x) = \frac{-x^3 - x}{2 + x^2} = -\frac{(x^3 + x)}{2 + x^2} = -\frac{x^3 + x}{2 + x^2}$$

$$= -f(x)$$

$f(x) = x^2 + x^3 + 2x - 7$ Neither

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

$\neq f(x)$

$f(x)$	(x, y)
$2f(x)$	$(x, 2y)$
$f(2x)$	$(\frac{1}{2}x, y)$
$f(-x)$	$(-x, y)$
$-f(x)$	$(x, -y)$

These are counter intuitive

Left

Right

Everything happens sooner.

Delay

$f(x+K)$ $(x-K, y)$

$f(x-K)$ $(x+K, y)$

up $f(x)+K$ $(x, y+K)$

down $f(x)-K$ $(x, y-K)$

$-2(x-2)^2+5 = g(x)$

$f(x)=x^2 \longrightarrow -2x^2 \longrightarrow -2(x-2)^2$

$(1,1) \longrightarrow (1,-2) \longrightarrow (3,-2)$

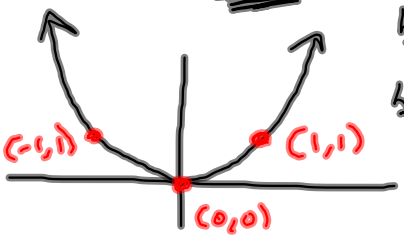
$-2f(x) \longrightarrow -2f(x-2)$

$-2(x-2)^2+5$

$(3,3)$

$-2f(x-2)+5$

$x^2 = f(x)$



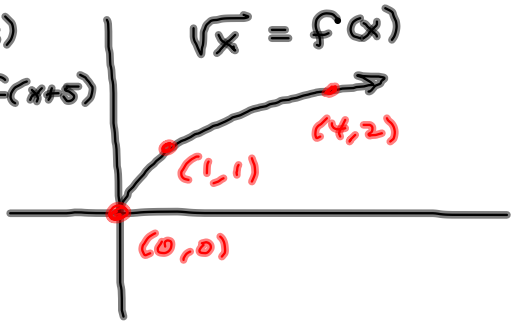
a. $-2x^2 = -2f(x)$

b. $-2(x+5)^2 = -2f(x+5)$

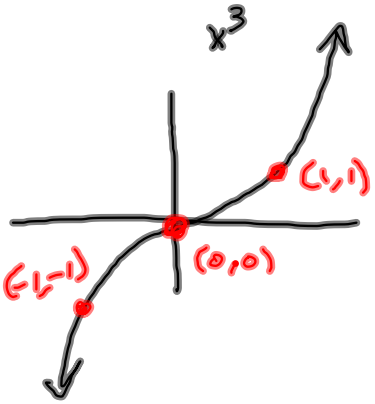
b. $-2(x+5)^2 - 11$

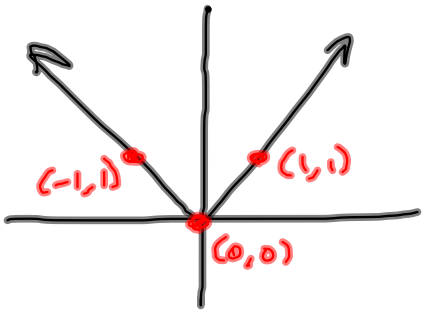
$= -2f(x+5) - 11$

$\sqrt{x} = f(x)$



x^3

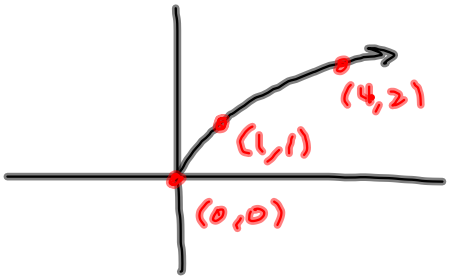




$|x| = f(x)$

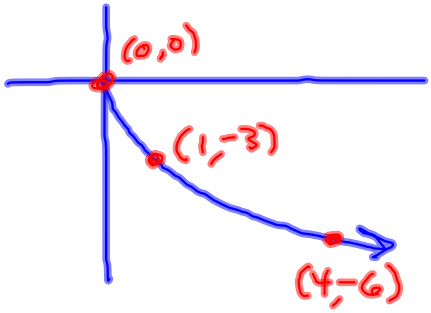
$g(x) = -3\sqrt{x+5} - 11$

$f(x) = \sqrt{x}$



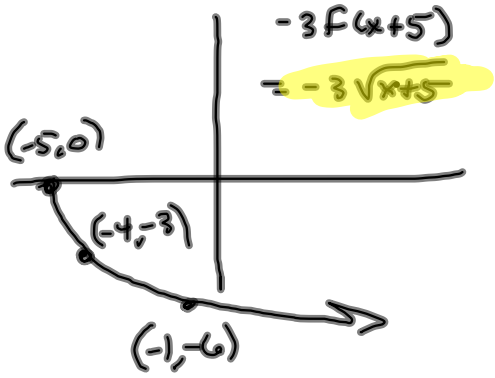
$-3f(x)$

$-3\sqrt{x}$



$-3f(x+5)$

$-3\sqrt{x+5}$



$-3\sqrt{x+5} - 11 =$

$-3f(x+5) - 11$