Even

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

Sym. abt y-axis

$y=x^2$

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

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

sym abt origin

$y=x^3$

ex) $f(x)=-3x^4+5x^2-7$

Even, odd, or neither

- $f(x)=4x^7+3x^3-x$

67. $f(x) = 1 - \sqrt[3]{x}$

$f(-x) = 1 - \sqrt[3]{-x} = 1 + \sqrt[3]{x} \neq f(x)$

$\neq -f(x)$

$\therefore$ Neither.

* ☺ Let $g(x) = g(-x)$

$h(x) = -h(-x)$

Let $f(x) = g(x) + h(x)$

Is $f(x)$ Even, odd, or neither?

$f(-x) = g(-x) + h(-x)$

$= g(x) - h(x) \neq f(x)$

$\neq -f(x)$

Neither

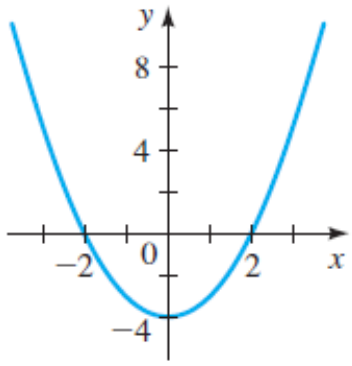
$$f(x) = -f(-x)$$

$$y = f(x) \xrightarrow{r_{x\text{-axis}}} y = -f(x)$$

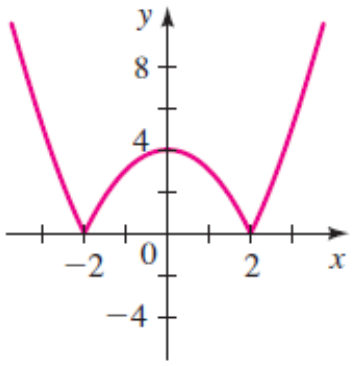
$$y = -f(-x) \xleftarrow{r_{y\text{-axis}}} y = -f(x)$$

$$r_{(0,0)} = r_{y\text{-axis}}(r_{x\text{-axis}})$$

69. The graphs of $f(x) = x^2 - 4$ and $g(x) = |x^2 - 4|$ are shown. Explain how the graph of g is obtained from the graph of f.



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



$g(x) = |x^2 - 4|$

$$f(x) = \begin{cases} x^2-4, & x \le -2 \\ x^2-4, & -2 < x < 2 \\ x^2-4, & 2 \le x \end{cases}$$

$y \ge 0$

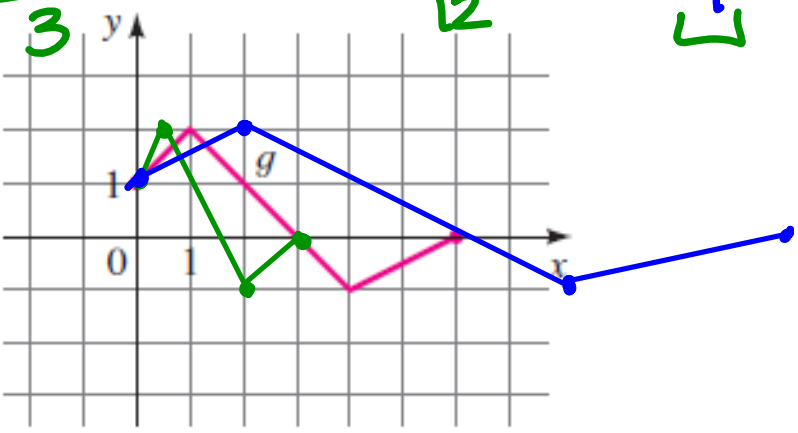
$-4 \le y < 0$

$0 \le y$

$$g(x) = \begin{cases} x^2-4, & x \le -2 \\ -(x^2-4), & -2 < x < 2 \\ x^2-4, & x \ge 2 \end{cases}$$

53. The graph of g is given. Use it to graph each of the following functions.

(a) $y = g(2x)$ **(b)** $y = g(\frac{1}{2}x)$



a: horizontal compression by a factor of 2 or horizontal scaling by a factor of 1/2

*** horizontal compression by a factor of 1/2 = horizontal stretch by a factor of 2***