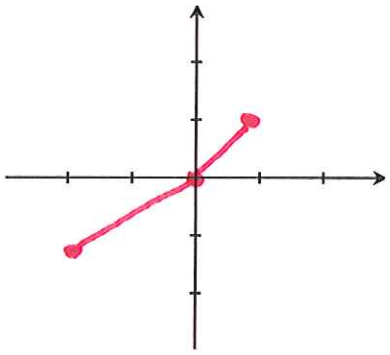
f

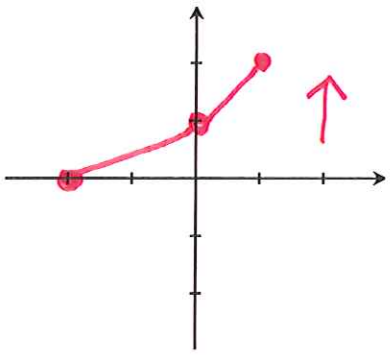


$$f(x)=\begin{cases}\frac{1}{2}x & -2\le x\le 0\\ x & 0\le x\le 1\end{cases}$$

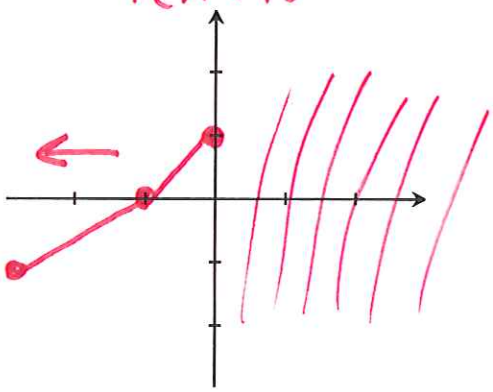
Range:

Domain

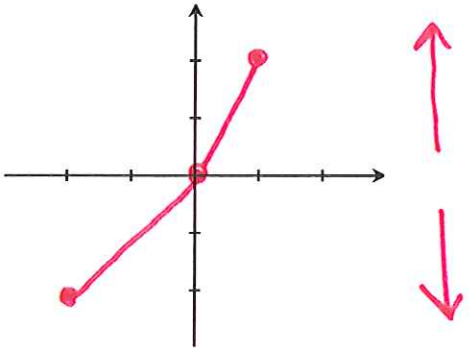
$f(x)+1$



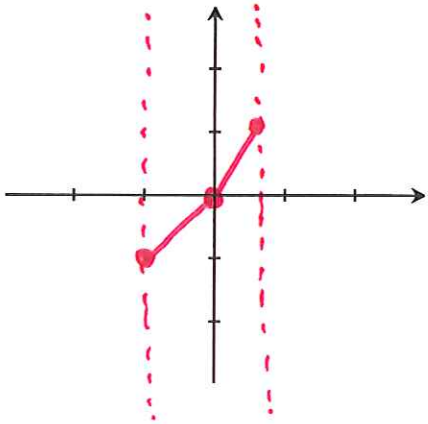
$f(x+1)$



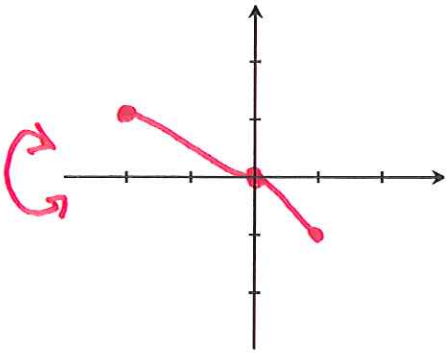
$2f(x)$



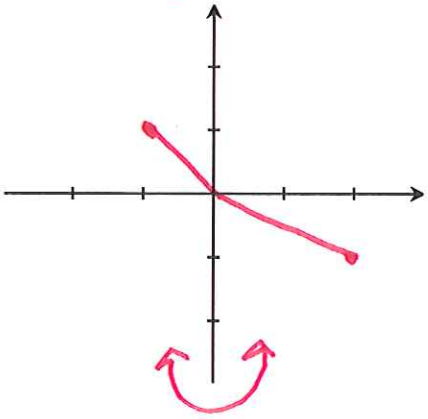
$f(2x)$

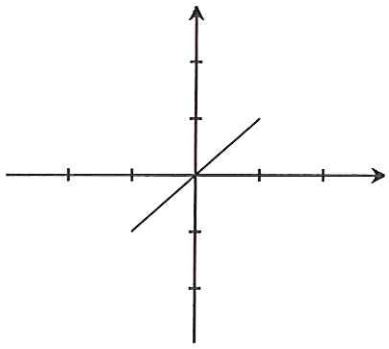


$-f(x)$

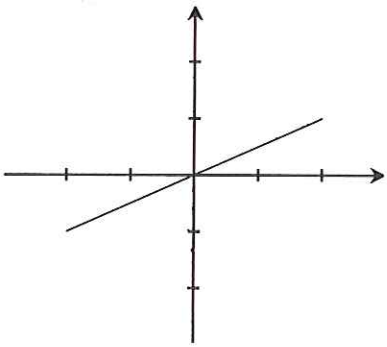


$f(-x)$

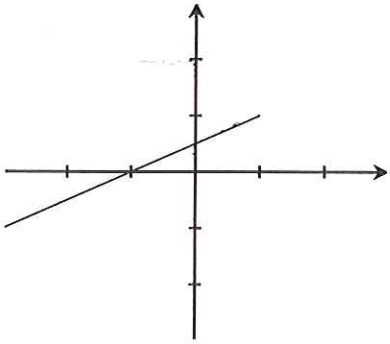




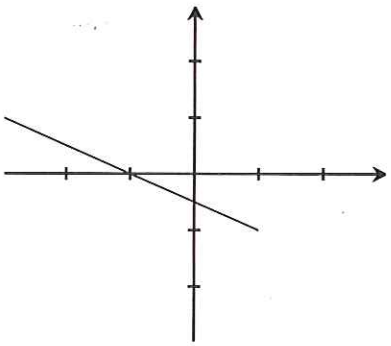
$\xrightarrow{f\left(\frac{1}{2}x\right)}$



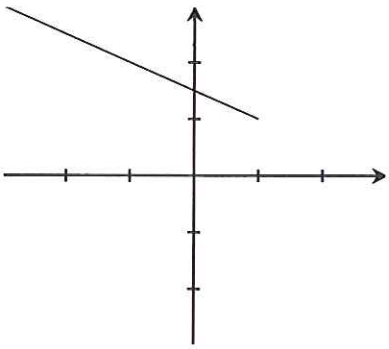
$\xrightarrow{f\left(\frac{1}{2}(x+1)\right)}$



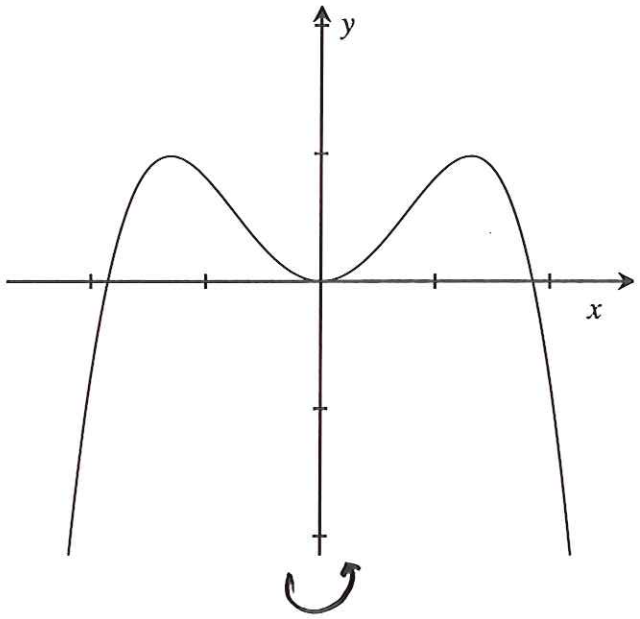
$\xrightarrow{-f\left(\frac{1}{2}(x+1)\right)}$



$\xrightarrow{-f\left(\frac{1}{2}(x+1)\right)+2}$

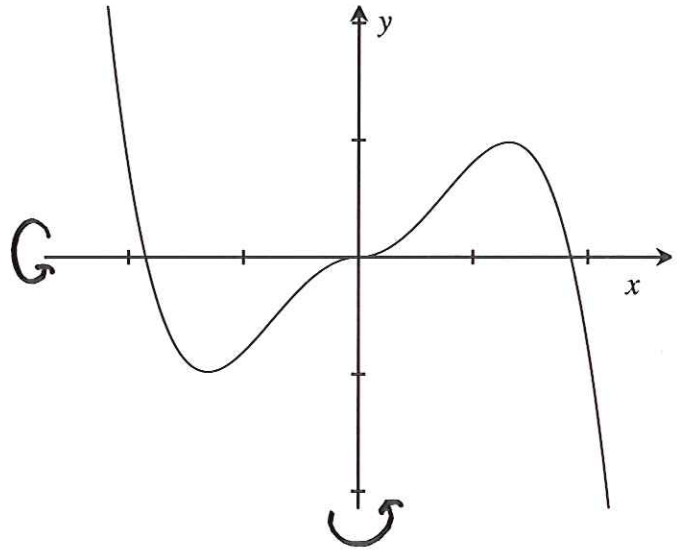


Symmetry

① 

An even function is a fn $f(x)$ satisfying

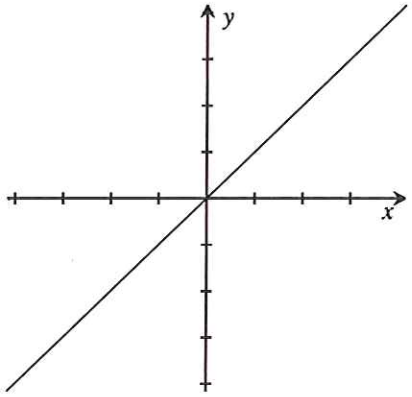
$$f(-x) = f(x)$$

② 

An odd function is a fn $f(x)$ satisfying

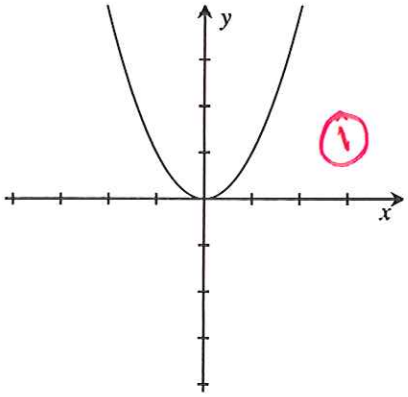
$$f(-x) = -f(x)$$

$y = x$



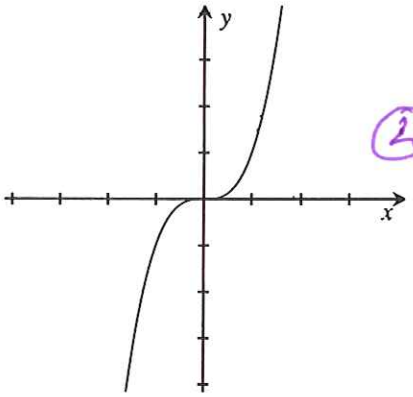
(2)

$y = x^2$



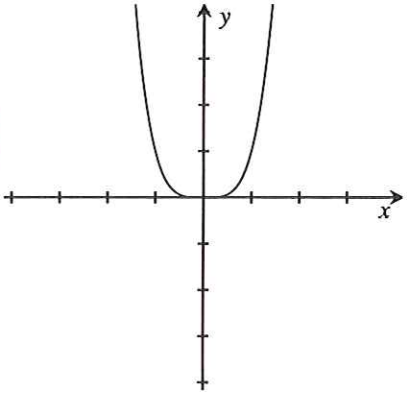
(1)

$y = x^3$



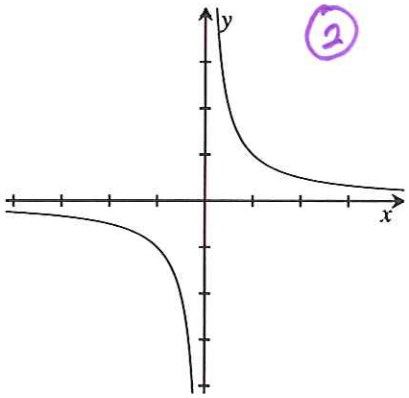
(2)

$y = x^4$



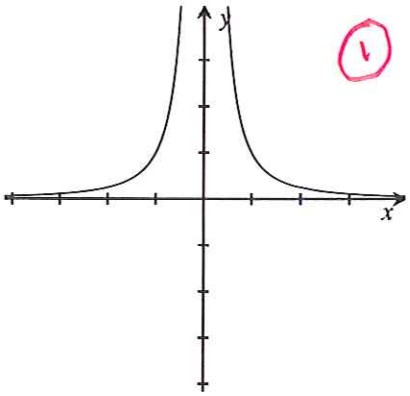
(1)

$y = x^{-1} = \dfrac{1}{x}$



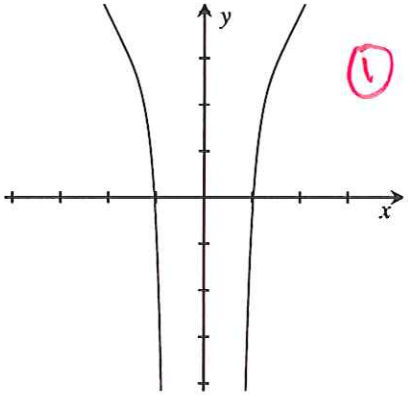
(2)

$y = x^{-2} = \dfrac{1}{x^2}$



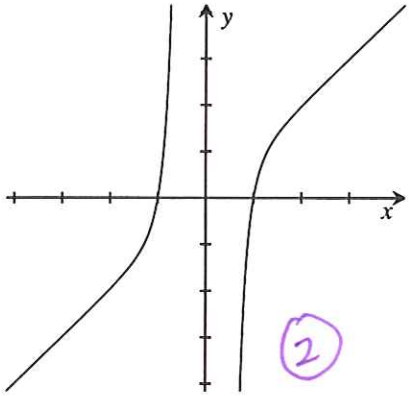
(1)

$y = 2 + \frac{1}{2}x^2 - x^{-6}$



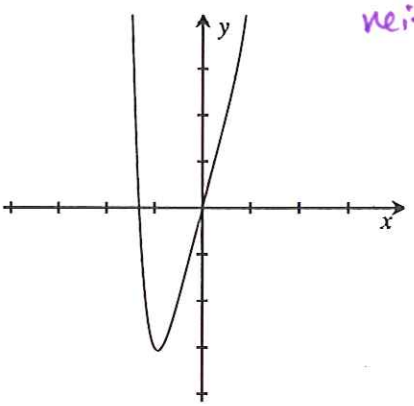
(1)

$y = x - x^{-5}$



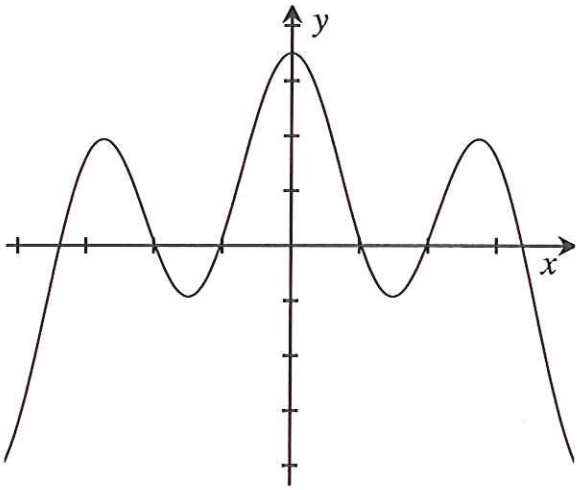
(2)

$y = 4x + x^6$

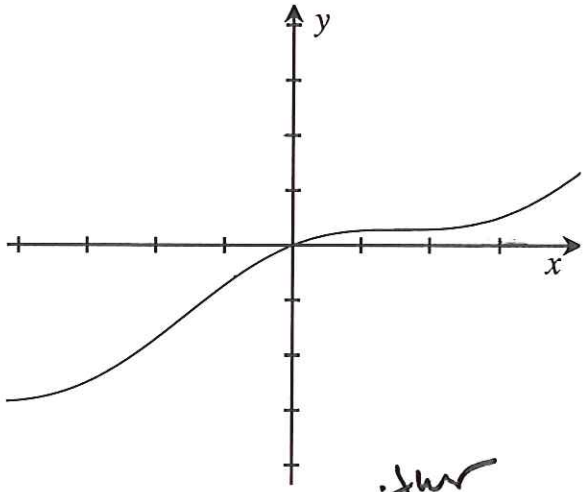


neither

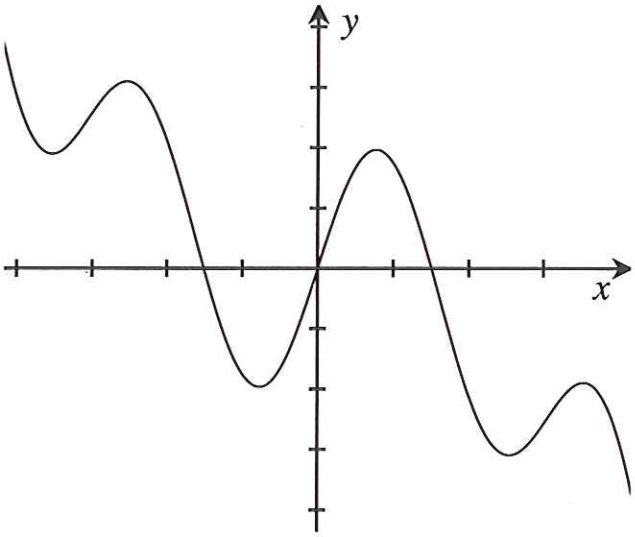
Examples: Even, Odd, or Neither?



even



neither



odd

even

$$f(x) = \frac{x^3 + x}{x + \frac{1}{x}}$$

(careful here:
actually plug in $-x$
and see what happens
algebraically)

$$f(-x) = \frac{(-x)^3 + (-x)}{(-x) + 1/(-x)} = \frac{-x^3 - x}{-x - \frac{1}{x}} = \frac{-(x^3 + x)}{-(x + \frac{1}{x})}$$

$$= \frac{x^3 + x}{x + \frac{1}{x}}$$

Pair up graphs with their inverses: