

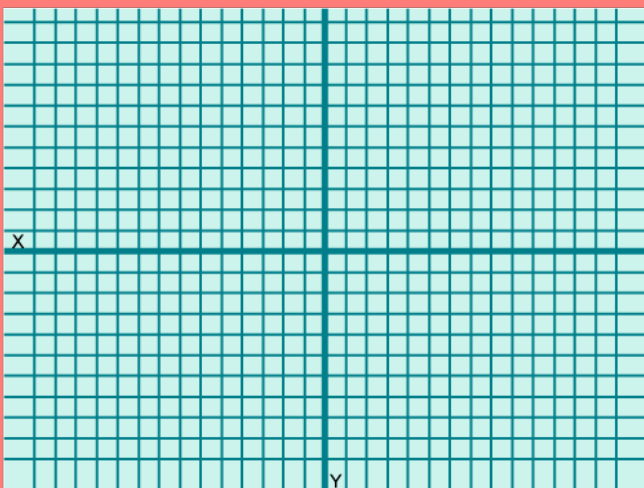
## PIECEWISE FUNCTIONS

$$f(x) = \begin{cases} -3|x+5| + 2 & x < -2 \\ \sqrt[3]{x+1} + 1 & -2 \leq x \leq 7 \\ (x-8)^3 + 1 & x > 7 \end{cases}$$

Right    Up

$$\begin{array}{c|c} 0 & 0 \\ \hline 1 & 1 \\ \hline 8 & 2 \end{array}$$

$$\begin{array}{c|c} 0 & 0 \\ \hline 1 & 1 \\ \hline 2 & 8 \end{array}$$



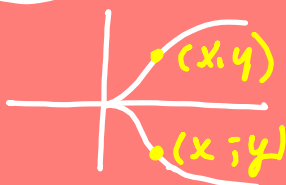
# Symmetry of Graphs



$$y = 2x^2 + 1$$

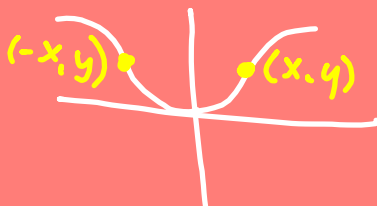
Must get original eq

x-axis  
sub in  $-y$



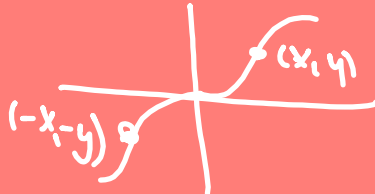
x-axis  
No  $-y = 2x^2 + 1$

y-axis  
sub in  $-x$



y-axis  
yes  $y = 2(-x)^2 + 1 = 2x^2 + 1$

origin  
sub in  $-x$  and  $-y$



origin  
no  $-y = 2(-x)^2 + 1$   
 $-y = 2x^2 + 1$

$$4xy + 2x^2 = 7$$

x-axis sub in -y	$4x(-y) + 2x^2 = 7$ $-4xy + 2x^2 = 7$	No
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y-axis sub in -x	$4(-x)y + 2(-x)^2 = 7$ $-4xy + 2x^2 = 7$	No
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Origin Sub in -x + -y	$4(-x)(-y) + 2(-x)^2 = 7$ $4xy + 2x^2 = 7$	Yes
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## EVEN/ODD FUNCTIONS

EVEN  $f(-x) = f(x)$  y-axis symm.

ODD  $f(-x) = -f(x)$  origin symm.

x-axis symm = not a func.

$$f(x) = 3x^6 - 2x^2 + 4$$

$$f(-x) = 3(-x)^6 - 2(-x)^2 + 4$$

$$= 3x^6 - 2x^2 + 4$$

Even

$$f(x) = x^3 - x + 1$$

$$f(-x) = (-x)^3 - (-x) + 1$$

$$= -x^3 + x + 1$$

$$= -(x^3 - x - 1)$$

Neither

$$f(x) = \frac{3x^2 - 5}{4x}$$

$$f(-x) = \frac{3(-x)^2 - 5}{4(-x)} = \frac{3x^2 - 5}{-4x} = -\frac{3x^2 - 5}{4x}$$

odd

$$\frac{-1}{2} \quad \frac{1}{-2} \quad \frac{-1}{2}$$