

## 1.6 Graph Transformations

consider  $y = f(x)$ 

Horizontal  
left/right movement  
Shape remains

$$y = f(x \pm c)$$

if  $c > 0$  move left  
if  $c < 0$  move right

Vertical  
up/down movement  
Shape remains

$$y = f(x) \pm c$$

if  $c > 0$  move up  
if  $c < 0$  move down

## Utilizing your Calculator

set window

$$[5, 5] \quad [5, 15]$$

$$y_1 = x^2$$

$$y_2 = y_1(x) + 3$$

$$y_3 = y_1(x) + 1$$

$$y_4 = y_1(x) - 2$$

} vertical

$$y_1 = x^2$$

$$y_2 = y_1(x - 4)$$

$$y_3 = y_1(x + 2)$$

$$y_3 = y_1(x - 1.5)$$

} horiz.

Ex 1

Describe the transformation &amp; rewrite

a)  $y = |x| + 4$

b)  $y = |x - 1|$