

## 1.2 Translating Graphs of Functions

Complete Investigation Handout

**Summary of Translations:**  $y = f(x - h) + k$

$-h \rightarrow$  translated to the right  
                    h units

$+h \rightarrow$  . . . . . left h units

$+k \rightarrow$  translates up a value of k

$-k \rightarrow$  . . . . . down — .

The function  $y = f(x)$  has a point  $(-2, 3)$ . The equation of its image has the form  $y = f(x - h) + k$ . Determine the equation for each translation and the coordinates of the new point.

a) 6 units left  $y = f(x + 6) \quad (-8, 3)$

b) 4 units down  $y = f(x) - 4 \quad (-2, -1)$

c) 8 right and 2 up  $y = f(x - 8) + 2 \quad (6, 5)$

d) "a" left and "b" up  $y = f(x + a) + b$   
 $(-2 - a, 3 + b)$

Explain in your own words how the function  $y = f(x)$  is changed by the translation  $y + 7 = f(x + 2)$

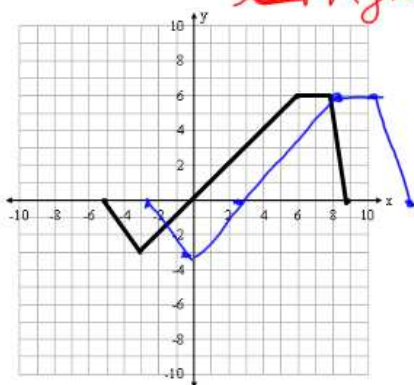
$y = f(x + 2) - 7$   
 translated 2 units left &  
 7 units down.

## Sketching Translations and Writing Equations

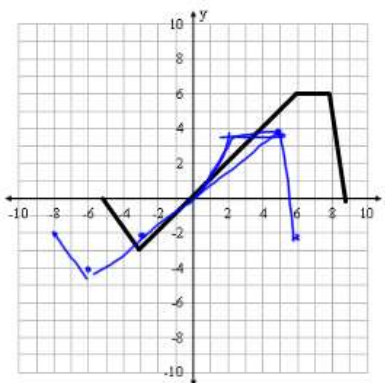
The graph of  $f(x)$  is shown. Sketch

$$y = f(x - 2)$$

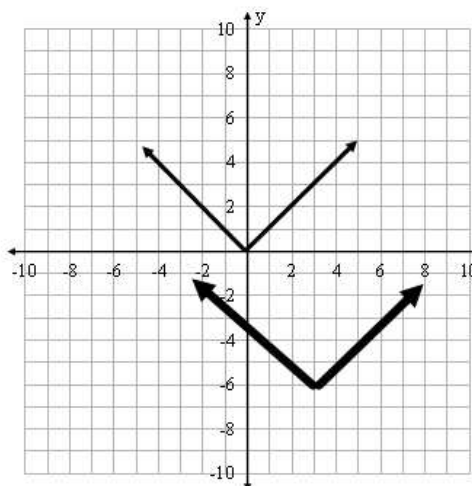
*translated  
~~left~~ right 2*



$$y + 2 = f(x + 3) - 2$$



Write an equation for the function represented by the thick line



$$y = f(x - 3) - 6$$