



# Linear Transformation Worksheet #1

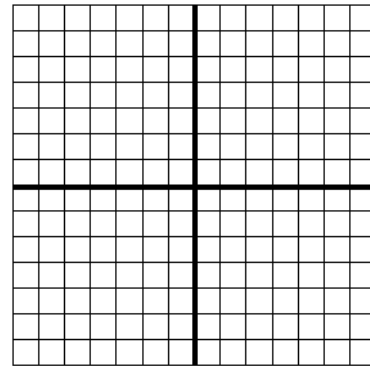
Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Describe the change in terms of  $f(x)$  (write the rule) for the transformation described.

1. vertical translation 3 units down 1. \_\_\_\_\_
2. vertical compression by a factor of  $\frac{1}{4}$  2. \_\_\_\_\_
3. horizontal translation 5 units left 3. \_\_\_\_\_
4. reflection across the  $x$ -axis 4. \_\_\_\_\_

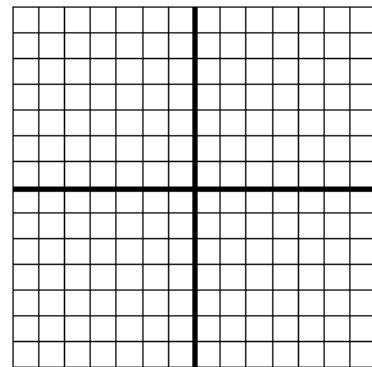
5.  $f(x) = x + 3$

Translate  $f(x)$  down 5 units.  
Write the transformed function in terms of  $g(x)$  and then graph both on the right.



6.  $f(x) = 4x - 3$

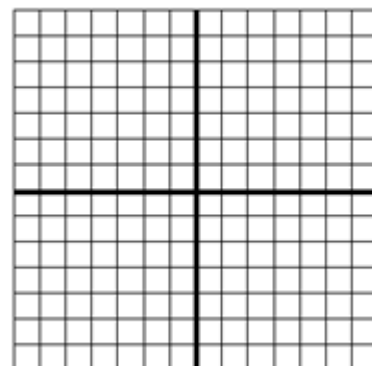
Translate the graph 2 up and then 2 to the right.  
Write the transformed function in terms of  $g(x)$  and then graph both on the right.



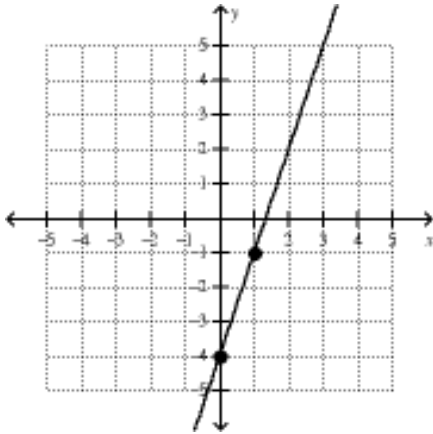
7.  $f(x) = 2x - 3$

Transform  $f(x)$  with a vertical stretch of 2 and then reflect over the  $x$ -axis.

Write the transformed function in terms of  $g(x)$  and then graph both on the right.



8. (a) Use the graph to determine the function rule for  $f(x)$ .  
 (b) Let  $g(x)$  be a vertical translation 2 units down of  $f(x)$ .  
 (c) Write the function rule for  $g(x)$ .  
 (d) Graph  $g(x)$



(a)  $f(x) = \underline{\hspace{1cm}}x + \underline{\hspace{1cm}}$

(b) Rule:  $\underline{\hspace{2cm}}$

(c)  $g(x) = \underline{\hspace{2cm}}$

9. (a) Use the table to determine the function rule for  $f(x)$ .  
 (b) Let  $g(x)$  be a vertical stretch of  $f(x)$  by a factor of 2.

<b>x</b>	<b>0</b>	<b>3</b>	<b>6</b>
<b>f(x)</b>	<b>5</b>	<b>11</b>	<b>17</b>

(a)  $f(x) = \underline{\hspace{1cm}}x + \underline{\hspace{1cm}}$

(b) Rule:  $\underline{\hspace{2cm}}$

(c)  $g(x) = \underline{\hspace{2cm}}$

10. Let  $f(x) = 3x - 2$ . Use the given function to describe the listed transformations. Then, write the equation of the transformed function.

a.  $2f(x)$

b.  $f(x) - 7$

c.  $f(x + 2)$

d.  $-3f(x)$