

# Transformation Examples

Describe the transformations necessary to transform the graph of  $f(x)$  into that of  $g(x)$ .

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

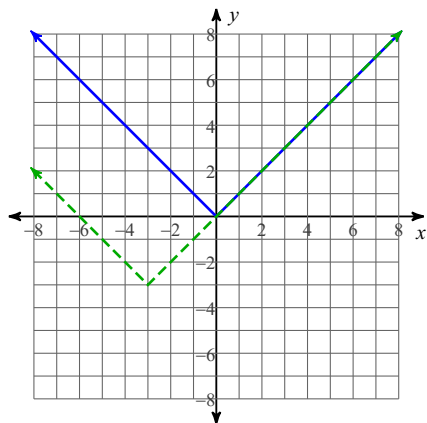
2)  $f(x) = |x|$   
 $g(x) = 2|x - 1|$

3)  $f(x) = \sqrt{x}$   
 $g(x) = \frac{1}{2}\sqrt{x} - 1$

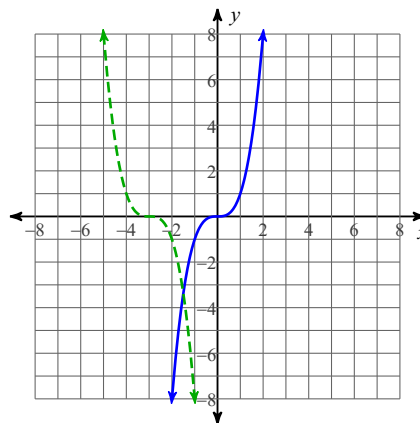
4)  $f(x) = x^2$   
 $g(x) = -(x + 2)^2$

Describe the transformations necessary to transform the graph of  $f(x)$  (solid line) into that of  $g(x)$  (dashed line). Write the equation of  $g(x)$ .

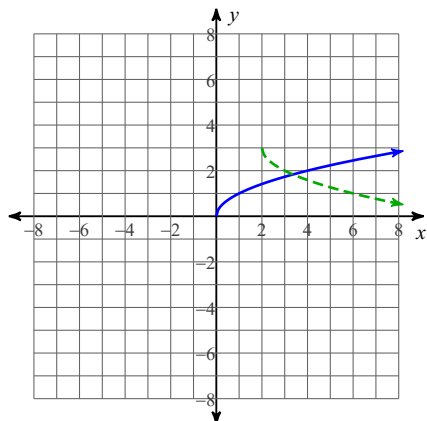
5)



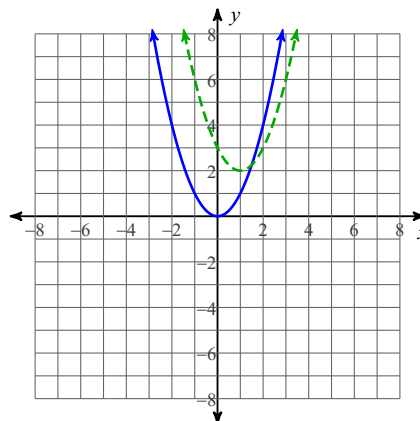
6)



7)



8)



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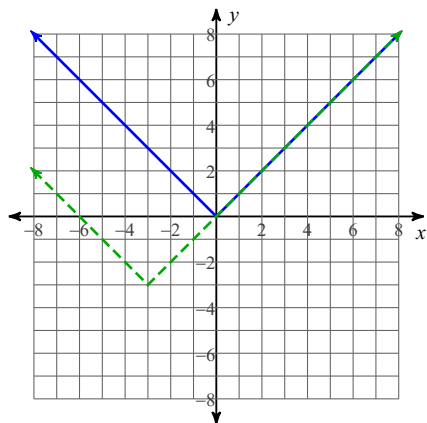
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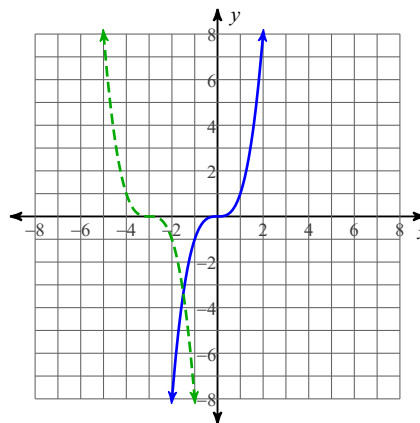
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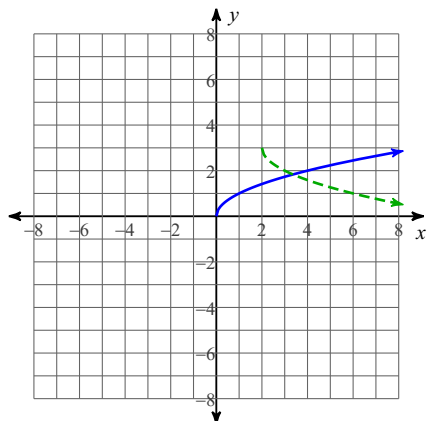
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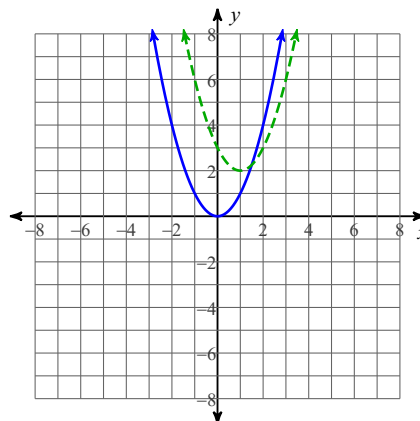
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Date \_\_\_\_\_ Period \_\_\_\_\_

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

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

reflect across the x-axis  
translate up 1 unit

$$2) f(x) = |x|$$

$$g(x) = 2|x - 1|$$

expand vertically by a factor of 2  
translate right 1 unit

$$3) f(x) = \sqrt{x}$$

$$g(x) = \frac{1}{2}\sqrt{x} - 1$$

compress vertically by a factor of 2  
translate down 1 unit

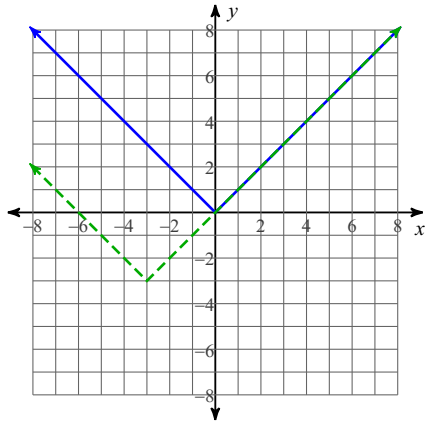
$$4) f(x) = x^2$$

$$g(x) = -(x + 2)^2$$

reflect across the x-axis  
translate left 2 units

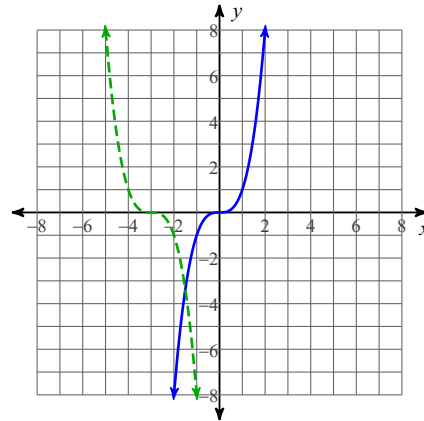
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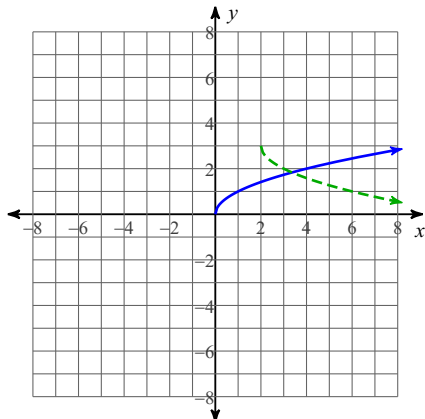
translate left 3 units  
translate down 3 units

6)



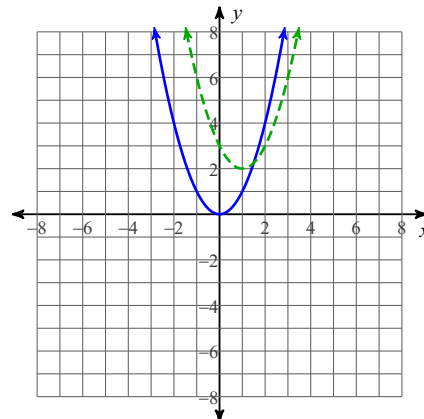
reflect across the x-axis  
translate left 3 units

7)



reflect across the x-axis  
translate right 2 units  
translate up 3 units

8)



translate right 1 unit  
translate up 2 units