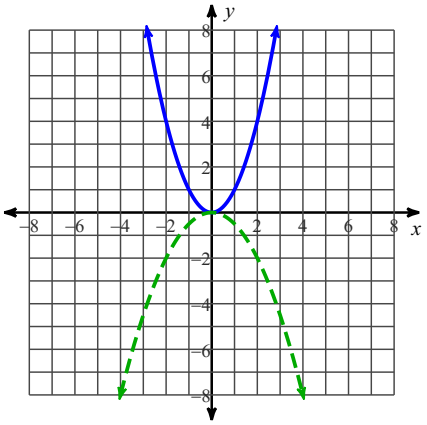
Pre-AP Algebra 2

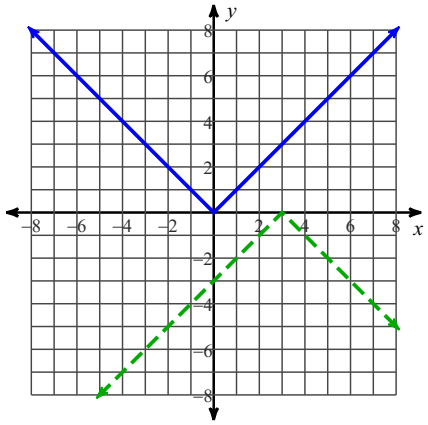
Function Transformations

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

1)



2)



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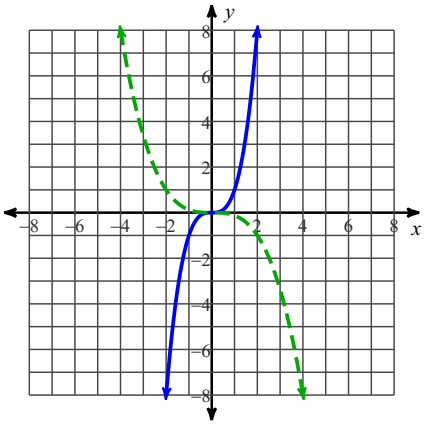
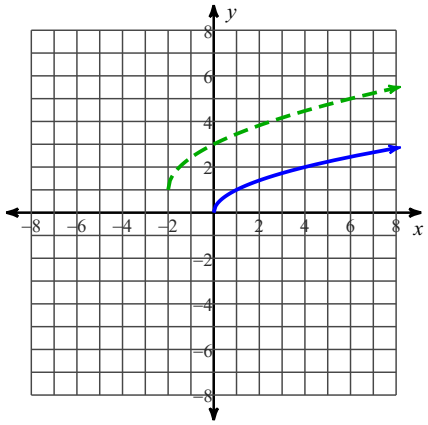


4)



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

5) $f(x) = \frac{1}{x}$

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

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

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

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

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

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

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

Transform the given function $f(x)$ as described and write the resulting function as an equation.

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

shrink vertically by a factor of $\frac{1}{2}$

reflect across the x-axis

translate right 3 units

10) $f(x) = \frac{1}{x}$

stretch horizontally by a factor of 3

translate left 3 units

translate up 1 unit

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

shrink horizontally by a factor of $\frac{1}{3}$

reflect across the x-axis

translate down 2 units

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

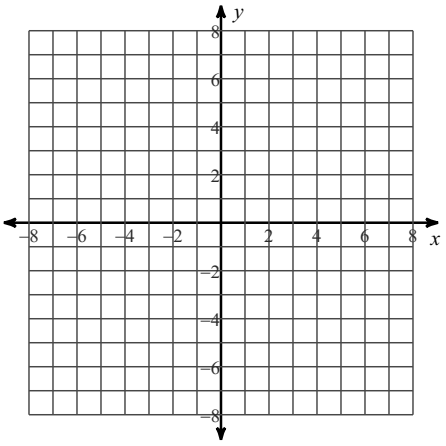
reflect across the y-axis

translate right 3 units

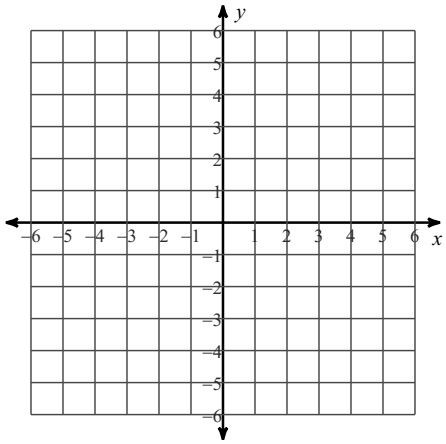
translate down 2 units

State the equation of the parent function and describe the transformations. Use the parent to sketch the graph of g(x) without using a calculator.

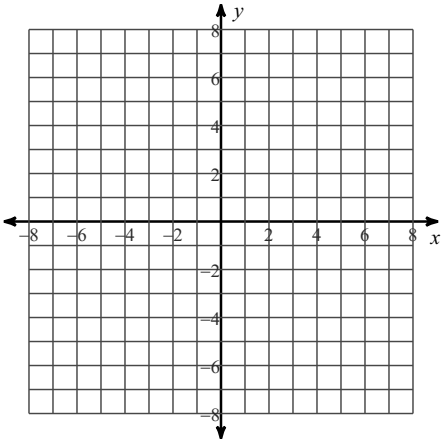
13) $g(x) = -\sqrt{-x} - 3$



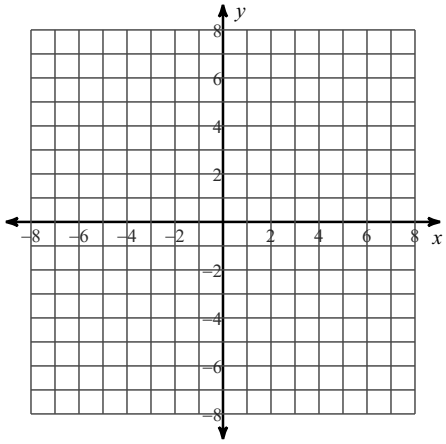
14) $g(x) = 2\lfloor x \rfloor + 1$



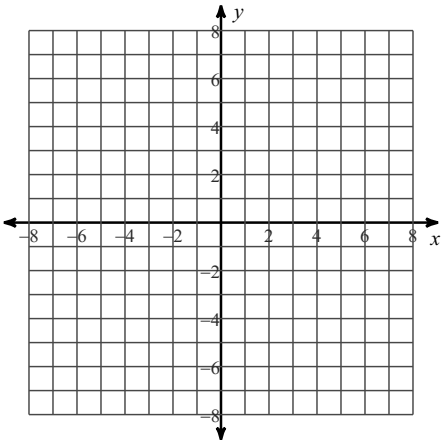
15) $g(x) = \dfrac{1}{x+3} - 1$



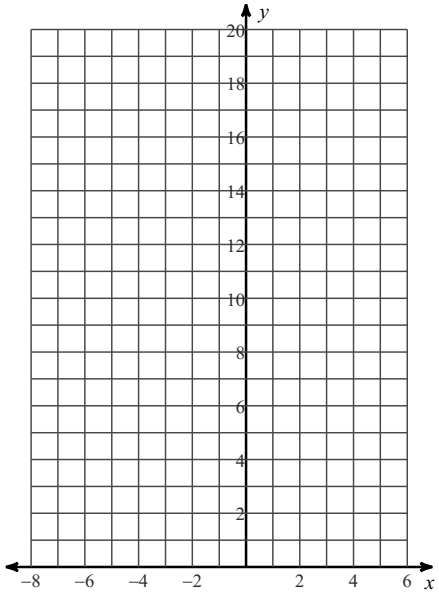
16) $g(x) = \left| x - 2 \right| + 3$



17) $y = \log_5 (x - 1) + 1$



18) $y = 5 \cdot 2^{x+1} + 2$



Answers to Function Transformations

1) compress vertically by a factor of 2
reflect across the x-axis

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

3) expand horizontally by a factor of 2
reflect across the x-axis

4) compress horizontally by a factor of 2
translate left 2 units
translate up 1 unit

5) reflect across the x-axis
translate right 1 unit
translate up 2 units

6) compress vertically by a factor of 2
reflect across the x-axis
translate down 2 units

7) compress vertically by a factor of 3
reflect across the x-axis
translate down 3 units

8) reflect across the y-axis
compress vertically by a factor of 2
reflect across the x-axis
translate right 1 unit

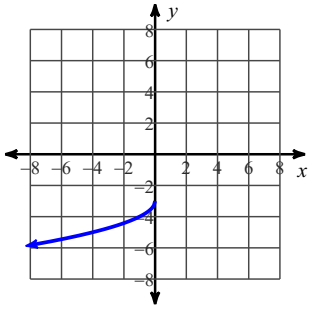
9) $g(x) = -\frac{1}{2}(x-3)^2$

10) $g(x) = \frac{1}{3(x+3)} + 1$

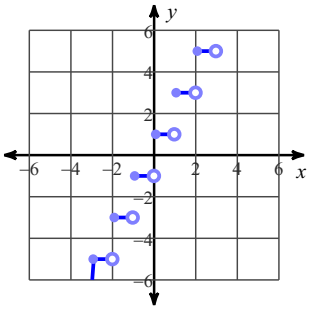
11) $g(x) = -(3x)^3 - 2$

12) $g(x) = \sqrt{-(x-3)} - 2$

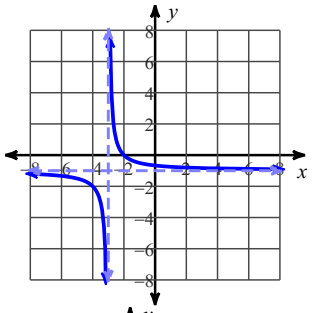
13)



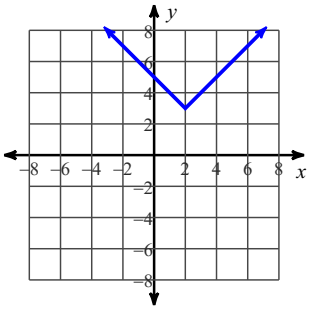
14)



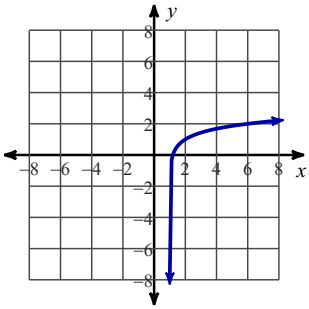
15)



16)



17)



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