

LOF WKST 2

Date _____ Period _____

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

$$1) \begin{aligned} f(x) &= |x| \\ g(x) &= \left| \frac{1}{3}x \right| - 3 \end{aligned}$$

$$2) \begin{aligned} f(x) &= \sqrt{x} \\ g(x) &= -3\sqrt{-x} \end{aligned}$$

$$3) \begin{aligned} f(x) &= |x| \\ g(x) &= \frac{1}{2} \cdot |x + 3| \end{aligned}$$

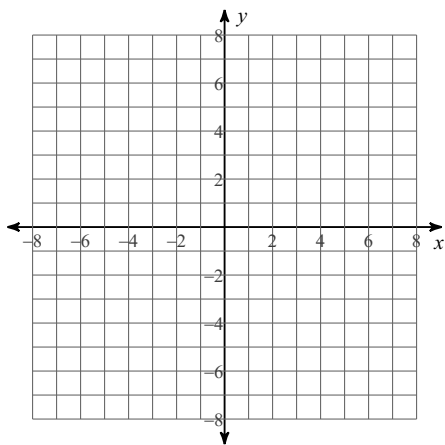
$$4) \begin{aligned} f(x) &= \sqrt{x} \\ g(x) &= \sqrt{\frac{1}{3}(x - 3)} - 2 \end{aligned}$$

$$5) \begin{aligned} f(x) &= x^2 \\ g(x) &= \frac{1}{2}x^2 - 3 \end{aligned}$$

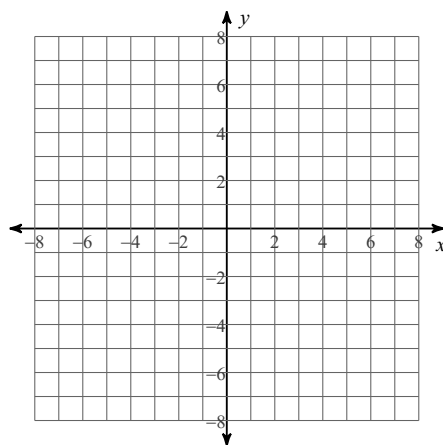
$$6) \begin{aligned} f(x) &= x^2 \\ g(x) &= -(x - 1)^2 \end{aligned}$$

Sketch the graph of each function. State the domain and range in interval notation.

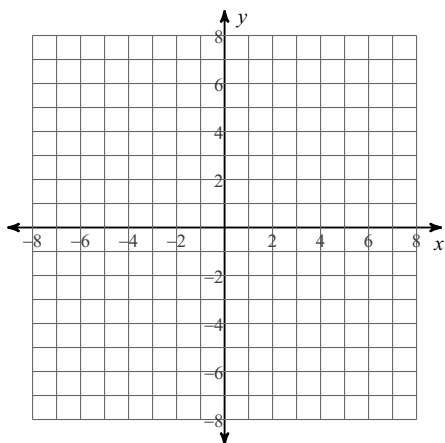
$$7) g(x) = 2(x + 3)^2$$



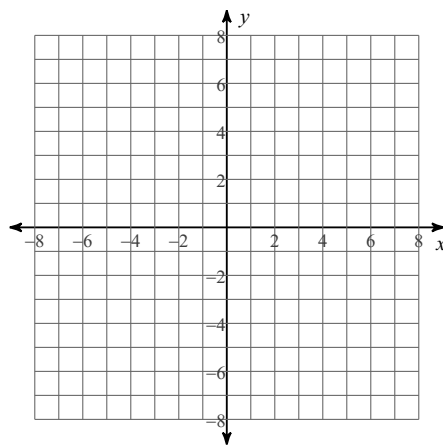
$$8) g(x) = \frac{1}{2}\sqrt{x} + 3$$



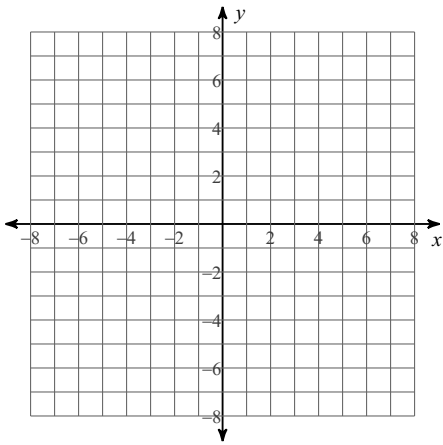
$$9) g(x) = 3x^2 + 3$$



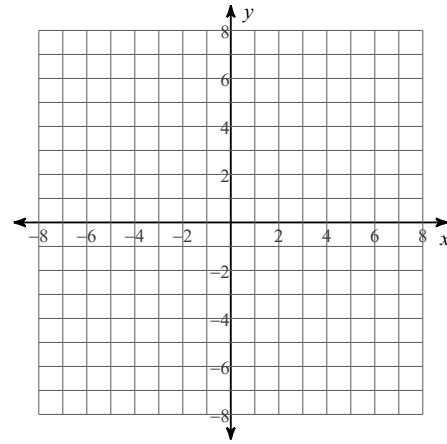
$$10) g(x) = |2x| - 1$$



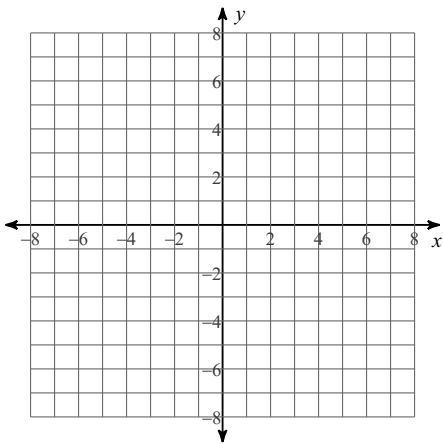
$$11) g(x) = \sqrt{-(x-3)} - 3$$



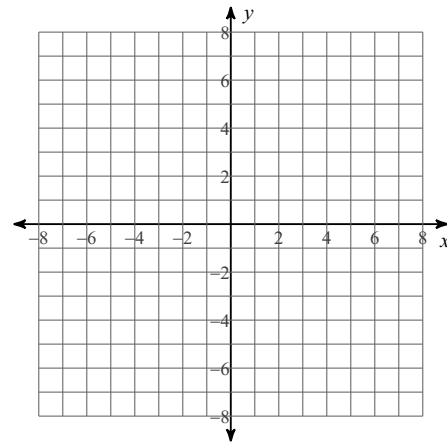
$$12) g(x) = \left| \frac{1}{2}(x+1) \right| + 3$$



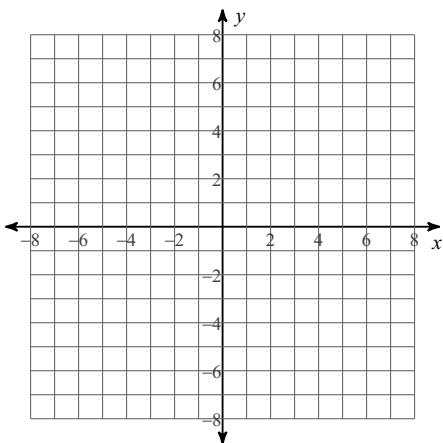
$$13) g(x) = -\sqrt{\frac{1}{2}(x+2)} + 3$$



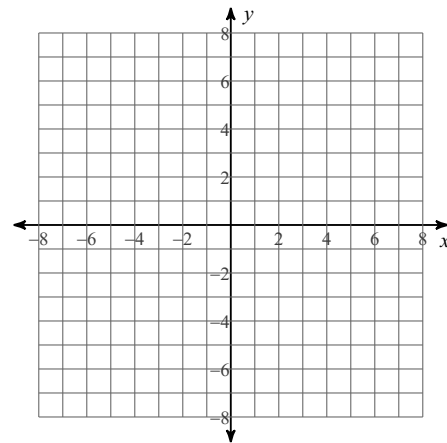
$$14) g(x) = \frac{1}{2}(x+1)^2 - 3$$



$$15) g(x) = -\left(\frac{1}{2}(x-1)\right)^2 + 2$$



$$16) g(x) = -|3(x-1)| + 3$$



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

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

compress horizontally by a factor of 2
reflect across the x-axis
translate right 2 units

18) $f(x) = |x|$

reflect across the x-axis
translate left 2 units

19) $f(x) = |x|$

compress horizontally by a factor of 2
translate left 3 units

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

compress vertically by a factor of 3
reflect across the x-axis
translate down 2 units

LOF WKST 2

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

1) $f(x) = |x|$ expand horizontally by a factor of 3
 $g(x) = \left| \frac{1}{3}x \right| - 3$ translate down 3 units

2) $f(x) = \sqrt{x}$ reflect across the y-axis
 $g(x) = -3\sqrt{-x}$ expand vertically by a factor of 3
 reflect across the x-axis

3) $f(x) = |x|$ compress vertically by a factor of 2
 $g(x) = \frac{1}{2} \cdot |x + 3|$ translate left 3 units

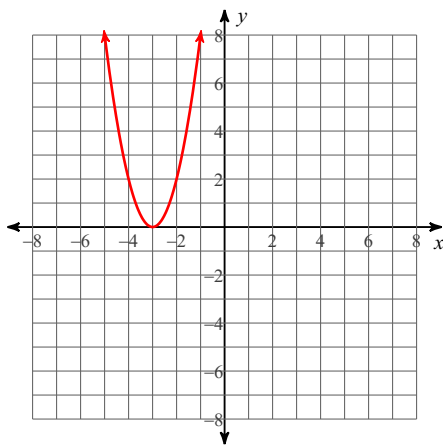
4) $f(x) = \sqrt{x}$ expand horizontally by a factor of 3
 $g(x) = \sqrt{\frac{1}{3}(x - 3)} - 2$ translate right 3 units
 translate down 2 units

5) $f(x) = x^2$ compress vertically by a factor of 2
 $g(x) = \frac{1}{2}x^2 - 3$ translate down 3 units

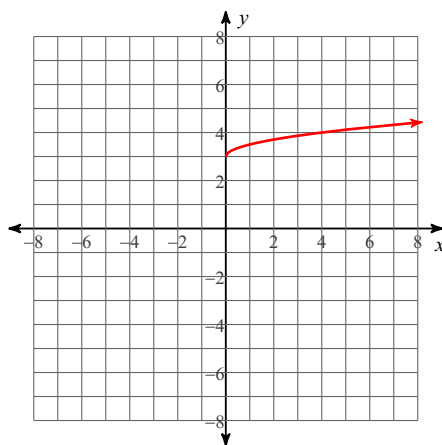
6) $f(x) = x^2$ reflect across the x-axis
 $g(x) = -(x - 1)^2$ translate right 1 unit

Sketch the graph of each function. State the domain and range in interval notation.

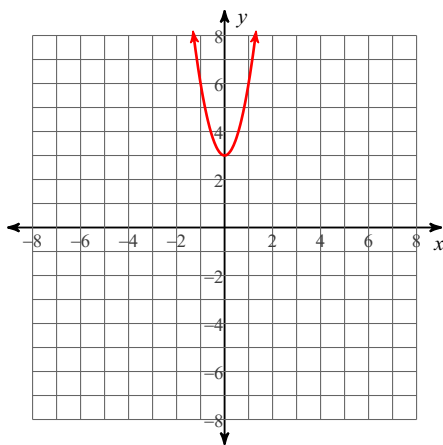
7) $g(x) = 2(x + 3)^2$



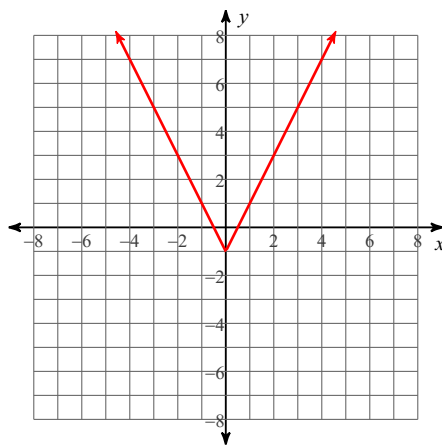
8) $g(x) = \frac{1}{2}\sqrt{x} + 3$



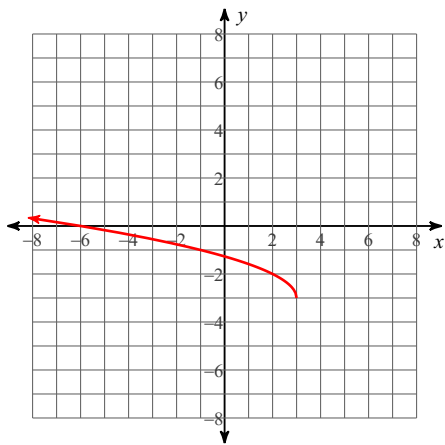
9) $g(x) = 3x^2 + 3$



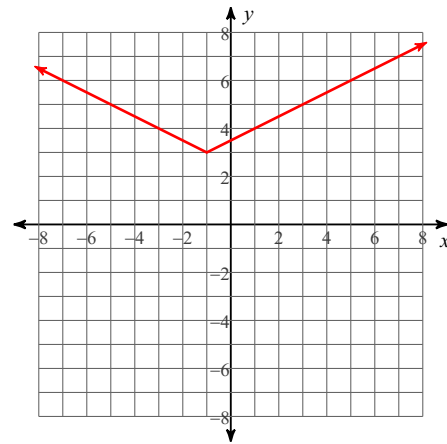
10) $g(x) = |2x| - 1$



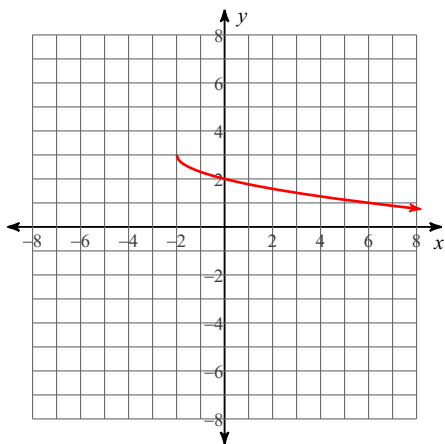
$$11) g(x) = \sqrt{-(x-3)} - 3$$



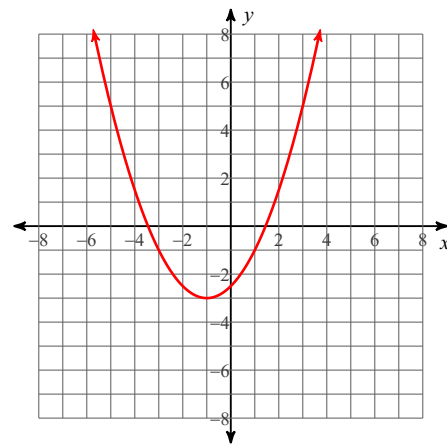
$$12) g(x) = \left| \frac{1}{2}(x+1) \right| + 3$$



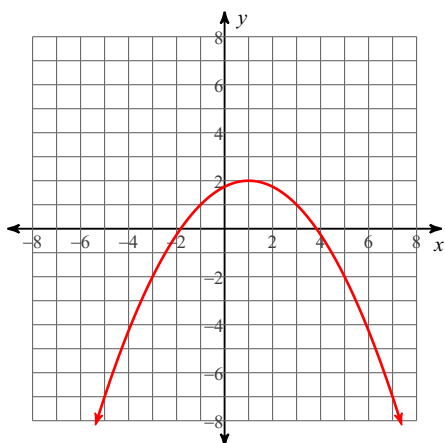
$$13) g(x) = -\sqrt{\frac{1}{2}(x+2)} + 3$$



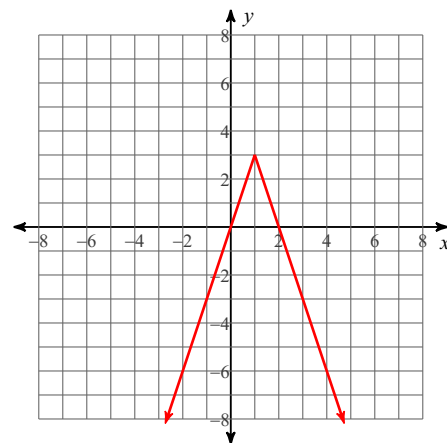
$$14) g(x) = \frac{1}{2}(x+1)^2 - 3$$



$$15) g(x) = -\left(\frac{1}{2}(x-1)\right)^2 + 2$$



$$16) g(x) = -|3(x-1)| + 3$$



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

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

compress horizontally by a factor of 2

reflect across the x-axis

translate right 2 units

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

18) $f(x) = |x|$

reflect across the x-axis

translate left 2 units

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

19) $f(x) = |x|$

compress horizontally by a factor of 2

translate left 3 units

$$g(x) = |2(x+3)|$$

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

compress vertically by a factor of 3

reflect across the x-axis

translate down 2 units

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