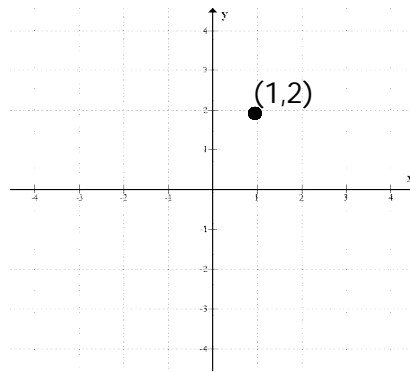# C12 - 1.1 - VT HT Points Translations HW

$(1,2)$

Point

$(x, f(x)) = (1,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation.
Draw the new point on the graph.

$f(x) + 1 =$ $\qquad$ $f(x) - 3 =$ $\qquad$ $f(x) - 4 =$ $\qquad$ $f(x) + 2 =$
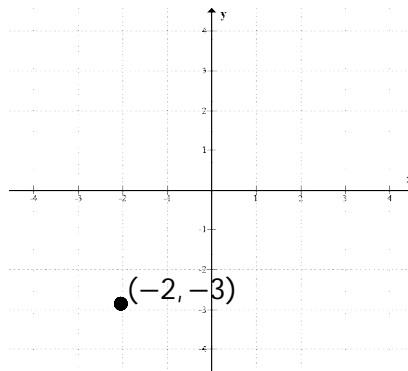
$f(x + 2) =$ $\qquad$ $f(x - 1) =$ $\qquad$ $f(x + 5) =$ $\qquad$ $f(x - 3) =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation.
Draw the new point on the graph.

Point

$(x, f(x)) = (-2, -3)$

$(-2, -3)$

$f(x) + 5 =$ $\qquad$ $f(x) - 1 =$ $\qquad$ $f(x) - 2 =$ $\qquad$ $f(x) + 4 =$

$f(x + 1) =$ $\qquad$ $f(x - 2) =$ $\qquad$ $f(x - 8) =$ $\qquad$ $f(x - 5) =$

C12 - 1.1 - VT HT Eng. Points Translations HW
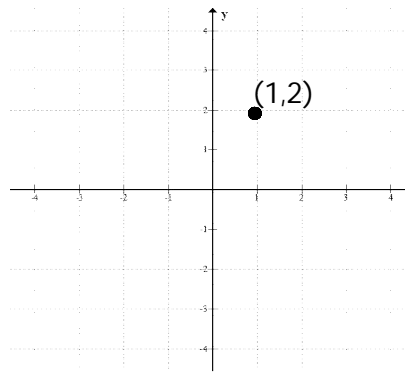
Point

$(x, f(x)) = (1,2)$

(1,2)

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

A vertical
translation up 2
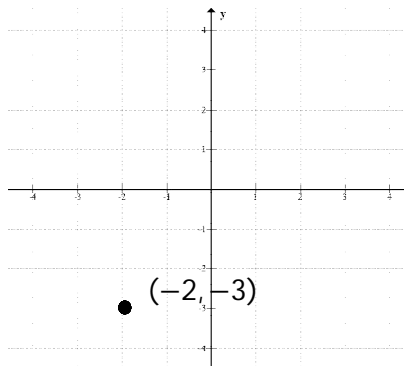
A horizontal
translation left 4

A horizontal
translation right 1

A vertical
translation down 5

A vertical translation up 1 and
A horizontal translation left 5

A vertical translation down 1 and
A horizontal translation right 5

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

Point

$f(x) = (-2, -3)$

$(-2, -3)$

A horizontal
translation right 3
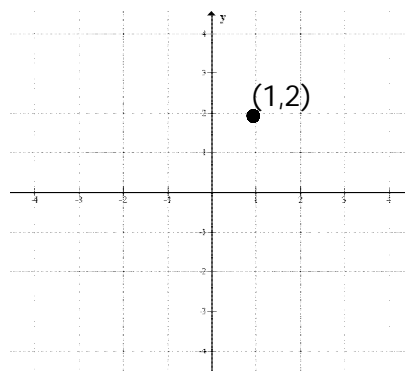
A vertical
translation up 1.5

A vertical
translation
down 3

A horizontal
translation left 2.5

A vertical translation down 1.5 and
A horizontal translation right 5

A vertical translation up 3 and
A horizontal translation left 2

C12 - 1.1 - VT HT Points Combo Translations HW

(1,2)

Point

$(x, f(x)) = (1,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

$f(x - 2) + 1 =$ $f(x + 3) - 3 =$ $f(x - 1) - 4 =$ $f(x + 2) + 2 =$
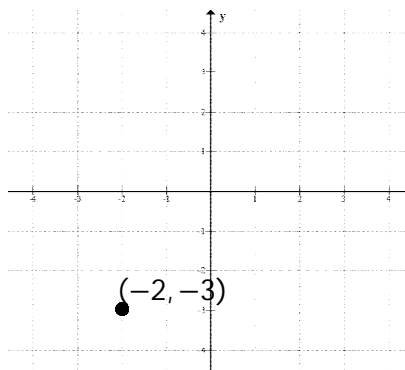
$f(x + 2) - 4 =$ $f(x - 1) + 1 =$ $f(x + 5) - 7 =$ $f(x - 3) + 3 =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

Point

$f(x) = (-2, -3)$

(-2, -3)

$f(x - 1) + 5 =$ $f(x + 2) - 1 =$ $f(x + 3) - 2 =$ $f(x - 1) + 4 =$
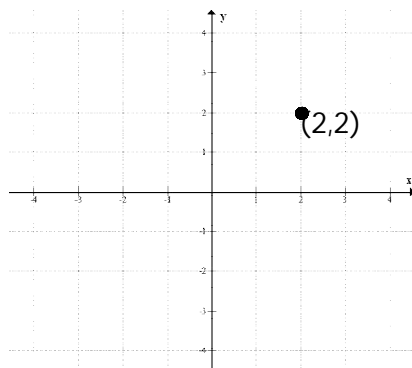
$f(x + 1) - 4 =$ $f(x - 2) + 11 =$ $f(x - 8) - 12 =$ $f(x - 5) - 1 =$

C12 - 1.2 - VE VC HE HC Points Exp/Comp HW

(2,2)

Point

$(x, f(x)) = (2,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

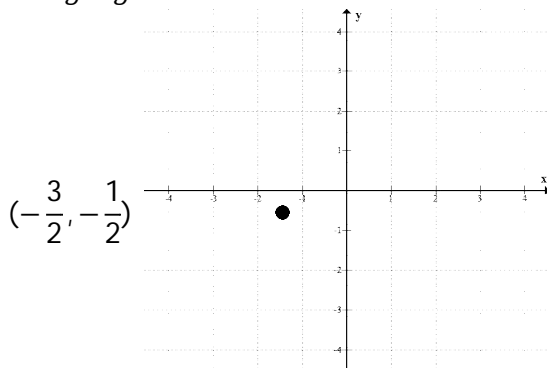$2f(x) =$ $\frac{1}{2}f(x) =$ $\frac{3}{2}f(x) =$ $3f(x) =$

$f(2x) =$ $f\left(\frac{1}{2}x\right) =$ $f(3x) =$ $f\left(\frac{1}{3}x\right) =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the gragh.

$(-\frac{3}{2}, -\frac{1}{2})$

Point

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

$2f(x) =$ $\frac{1}{2}f(x) =$ $\frac{3}{2}f(x) =$ $\frac{2}{3}f(x) =$
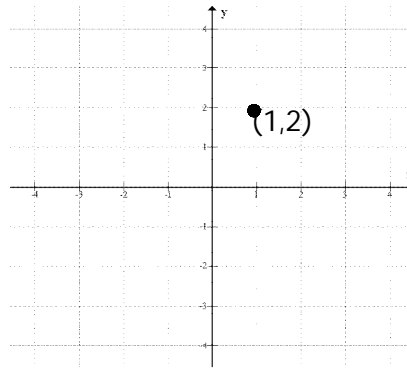
$f(2x) =$ $f\left(\frac{1}{2}x\right) =$ $f(3x) =$ $f\left(\frac{1}{3}x\right) =$

C12 - 1.2 - VE VC HE HC Eng. Points Combo Exp/Comp HW

Point

$$(x, f(x)) = (1,2)$$

Perform the following operations on the point $(x, f(x))$ *and state the new point and write in mapping notation. Draw the new point on the graph.*

A vertical expansion
by a factor of 2

A vertical compression
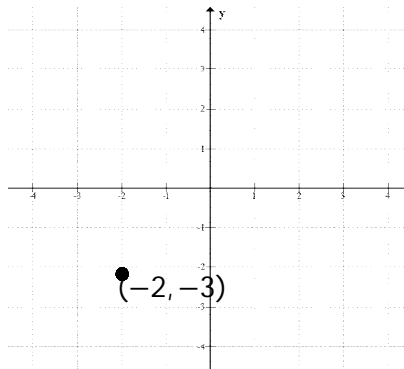by a factor of $\frac{1}{2}$

A horizontal compression
by a factor of $\frac{1}{2}$

A horizontal expansion
by a factor of 3

A vertical compression by a factor of 2 and
A horizontal expansion by a factor of 2

A vertical compression by a factor of 2 and
A horizontal compression by a factor of 2

Perform the following operations on the point $(x, f(x))$ *and state the new point and write in mapping notation. Draw the new point on the graph.*

Point

$$(x, f(x)) = (-2, -3)$$

A vertical expansion
by a factor of 2

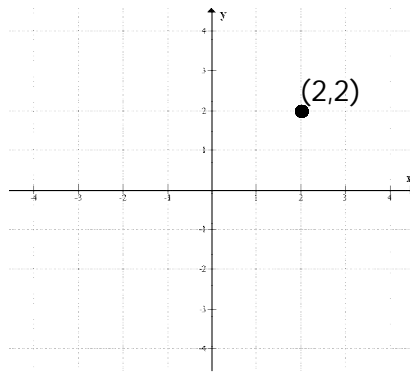A vertical compression
by a factor of 2

A horizontal compression
by a factor of 2

A horizontal expansion
by a factor of 2

A vertical expansion by a factor of 2 and
A horizontal compression by a factor of 2

A vertical expansion by a factor of 2 and
A horizontal expansion by a factor of 2

C12 - 1.2 - VE VC HE HC Points Combo Exp/Comp HW

(2,2)

Point

$(x, f(x)) = (2,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

$2f(2x) =$

$\frac{1}{2}f\left(\frac{1}{2}x\right) =$
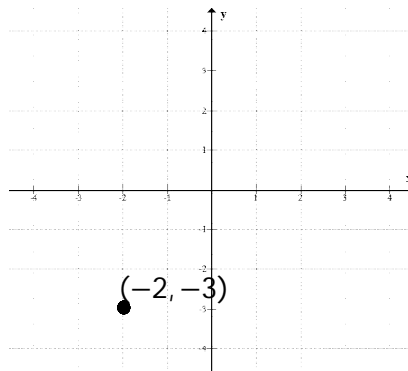
$\frac{3}{2}f(2x) =$

$3f\left(\frac{3}{2}x\right) =$

$3f(2x) =$
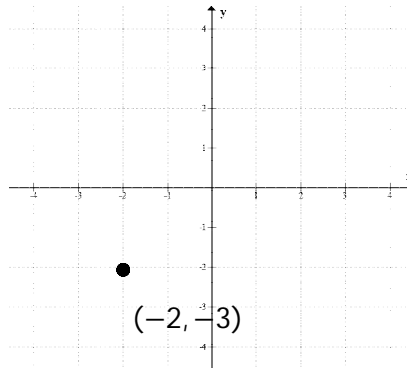
$2f\left(\frac{1}{2}x\right) =$

$\frac{1}{3}f(3x) =$

$\frac{1}{3}f\left(\frac{1}{3}x\right) =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

$(-2, -3)$

Point

$(x, f(x)) = (-2, -3)$

$2f\left(\frac{1}{2}x\right) =$

$\frac{1}{2}f(2x) =$

$\frac{3}{2}f\left(\frac{3}{2}x\right) =$

$\frac{1}{3}f(3x) =$

$\frac{1}{2}f(2x) =$

$2f\left(\frac{1}{2}x\right) =$

$\frac{1}{3}f(3x) =$

$\frac{1}{2}f\left(\frac{1}{3}x\right) =$

C12 - 1.3 - VR HR $f^{-1}(x)$ Points Reflection/Inverse WS
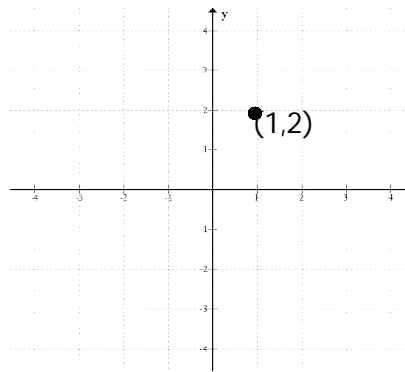
Point

$(x, f(x)) = (1,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

$-f(x) =$ $f(-x) =$ $-f(-x) =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.
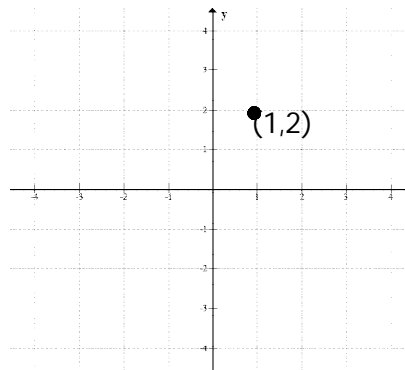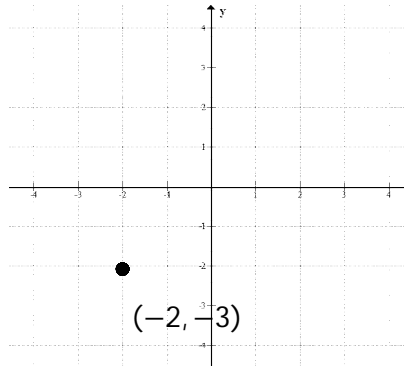
Point

$f(x) = (-2, -3)$

$(-2, -3)$

$-f(x) =$ $f(-x) =$ $-f(-x) =$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

$(1,4)$

Point

$f(x) = (1,4)$

$(-3,2)$

Point

$f(x) = (-3,2)$

$f^{-1}(x) =$
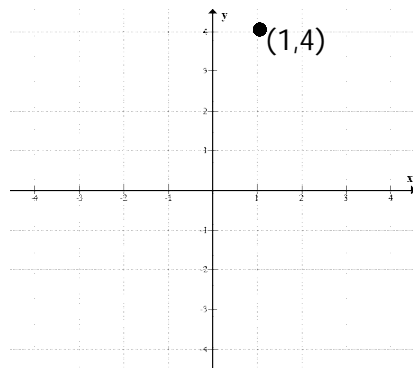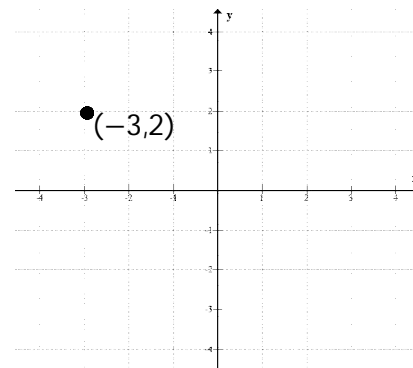
$f^{-1}(x) =$

C12 - 1.3 - VR HR $f^{-1}(x)$ *Eng.* Points Reflect/Inv WS

Point

$(x, f(x)) = (1,2)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

A vertical reflection

A horizontal reflection

Perform the following operations on the point $f(x)$ and state the new point and write in mapping notation. Draw the new point on the graph.
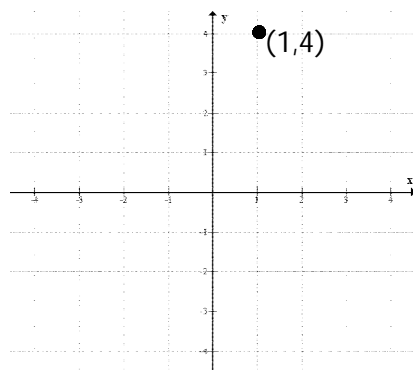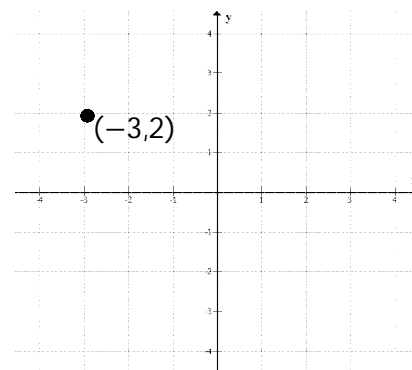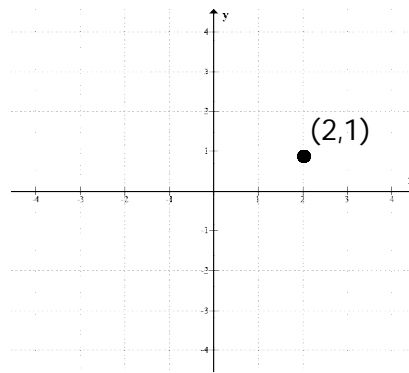
Point

$(x, f(x)) = (-2, -3)$

$(-2, -3)$

A vertical reflection

A horizontal reflection

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation. Draw the new point on the graph.

(1,4)

Point

$f(x) = (1,4)$

$(-3,2)$

Point

$f(x) = (-3,2)$

Inverse

Inverse

(2,1)

Point

$(x, f(x)) = (2,1)$

Perform the following operations on the point $(x, f(x))$ and state the new point and write in mapping notation.
Draw the new point on the graph.

$2f(x) + 1 =$

$-f(x) + 1 =$

$f(2x) - 2 =$

$f(-x) + 1 =$

$f(-(x + 1)) =$

$f(2x + 4) =$

$f(-2x + 1) =$

$f(-x + 1) =$

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

$\frac{1}{2}f\left(2x + \frac{1}{2}\right) - 2 =$

$-2f(-2(x + 1)) - 2 =$

$f^{-1}(x) + 1 =$

$2f^{-1}(x) =$

$f^{-1}(2x) =$

$f^{-1}(x - 1) =$

C12 - 1.123 - Point Transformation RV

If the point $(2,3)$ is on the graph of $f(x)$ what point must be on the graph of: Bedmas!

$f(x + 2)$

$f(x - 3)$

$f(x) + 1$

$f(x) - 3$

$2f(x)$

$\frac{1}{3}f(x)$

$f\left(\frac{1}{2}x\right)$

$f(2x)$

$f(-x)$

$-f(x)$

$-f(-x)$

$f^{-1}(x)$

$f(x + 2) - 3$

$2f(2x)$

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

C12 - 1.123 - Point Transformation RV

If the point $(-4,6)$ is on the graph of $f(x)$ what point must be on the graph of:

$f(x + 2)$

$f(x - 3)$

$f(x) + 1$

$f(x) - 3$

$2f(x)$

$\dfrac{1}{3}f(x)$

$f\left(\dfrac{1}{2}x\right)$

$f(2x)$

$f(-x)$

$-f(x)$

$-f(-x)$

$f^{-1}(x)$

$f(x + 2) - 3$

$2f(2x)$

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

C12 - 1.124 - Order Matters Pt. Eq. Eng. Trans WS

Find the new point.

$f(x) = (2,1)$

A vertical expansion by a factor of 2
A vertical translation up 2

A vertical translation up 2
A vertical expansion by a factor of 2

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

A horizontal compression of a half
A horizontal translation left 2

A horizontal translation left 2
A horizontal compression of a half

Find the new equation.

$f(x) = x^2$

A vertical expansion by a factor of 2
A vertical translation up 2

A vertical translation up 2
A vertical expansion by a factor of 2

A horizontal expansion by a factor of 2
A horizontal translation left 2

A horizontal translation left 2
A horizontal expansion by a factor of 2

C12 - 1.3 - Inverse Equation and Graph HW

Find the inverse of the following function and draw both on a graph and label at least 2 points on each
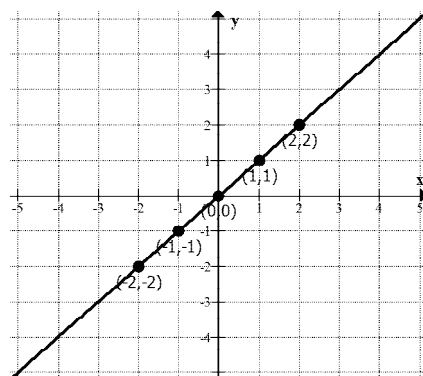
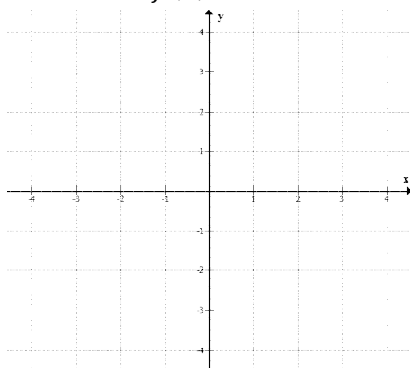$y = 2x - 4$

$y = x^2$.

$y = \dfrac{x}{x + 2}$
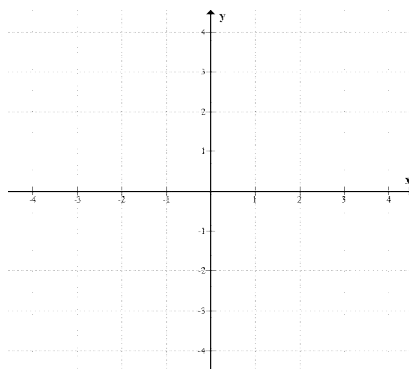
$y = (x + 2)^2 - 4$

Perform the following operations on the graph $f(x)$ and draw the new graph.

$f(x) + 1 =$

$f(x + 2) =$

$f(x - 1) =$

$2f(x) =$

$f(2x) =$

$f\left(\frac{1}{2}x\right) =$

$-f(x) =$

$f(-x) =$
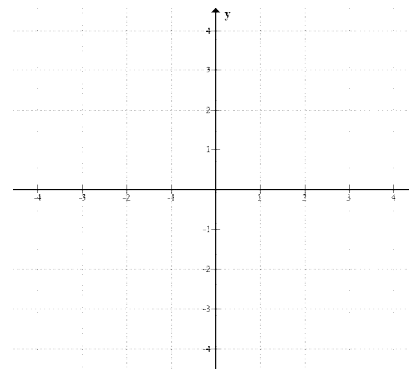
$-f(-x) =$

C12 - 1.4 - VT HT VC VE HC HE VR HR Graphs HW

Perform the following operations on the graph $f(x)$ and draw the new graph.
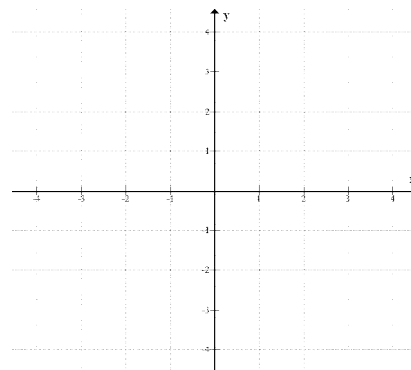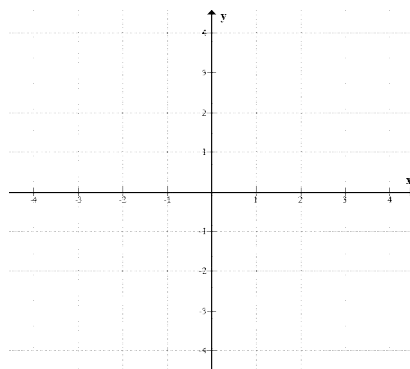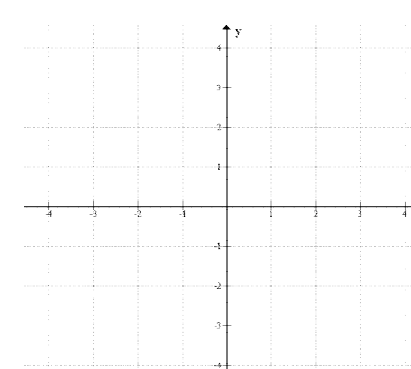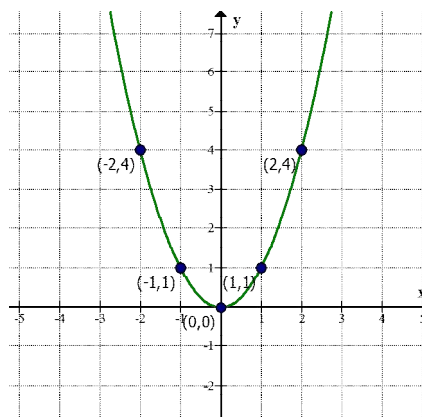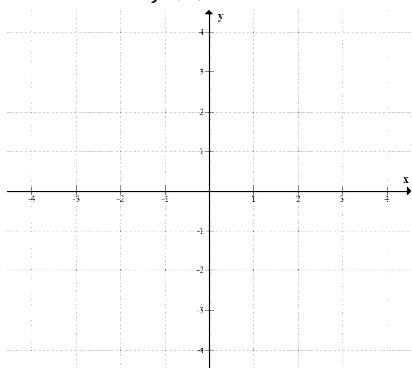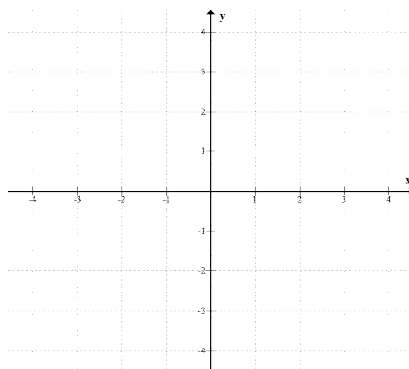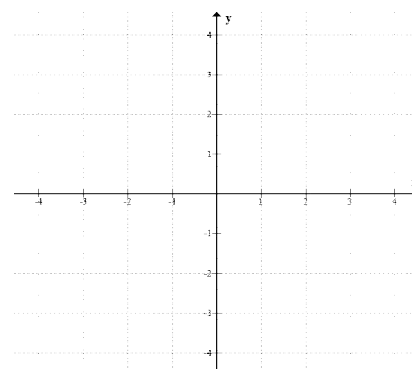
$f(x) + 1 =$

$f(x + 2) =$

$f(x - 1) =$

$2f(x) =$
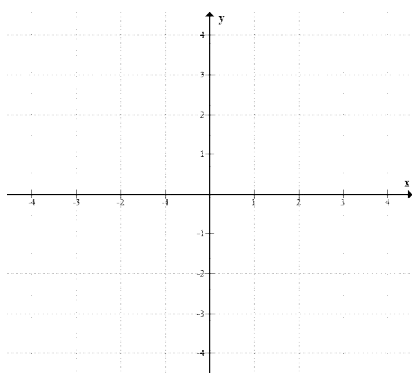
$f\left(\dfrac{1}{2}x\right) =$
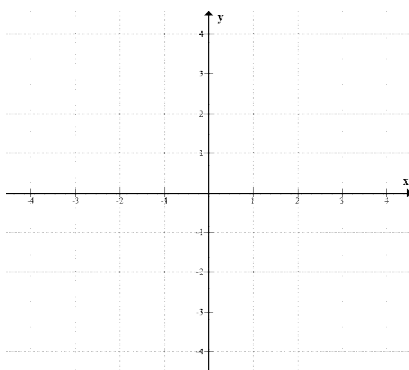
$f(2x) =$

$-f(x) =$
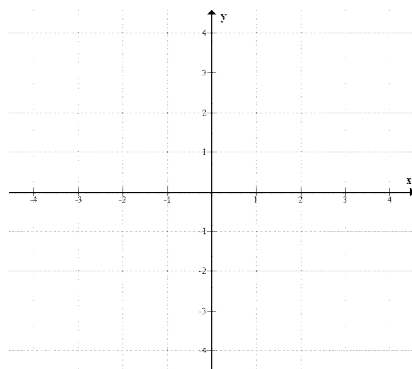
$f(-x) =$
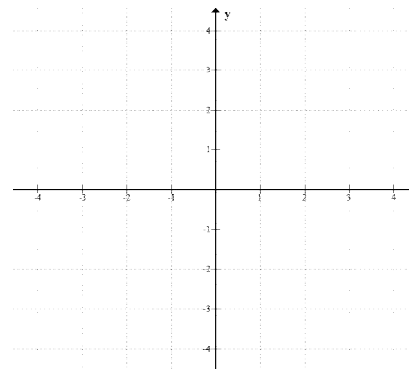
$f^{-1}(x) =$
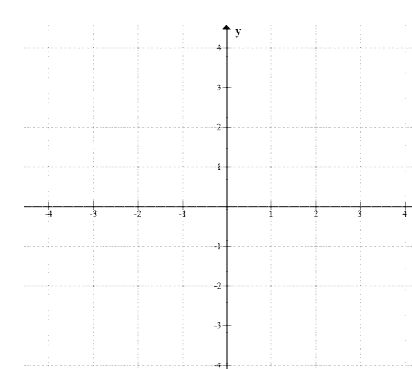
C12 - 1.4 - Equation Transformations WS

Find the new equation.

$f(x) = x^2$

$f(x + 2)$

$f(x - 3)$

$f(x) + 1$

$f(x) - 3$

$2f(x)$

$\frac{1}{3}f(x)$

$f\left(\frac{1}{2}x\right)$

$f(2x)$

$f(-x)$

$-f(x)$

$-f(-x)$

$f^{-1}(x)$

$f(x + 2) - 3$

$2f(2x)$

$f^{-1}(x) =$

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

C12 - 1.4 - Equation Transformations WS

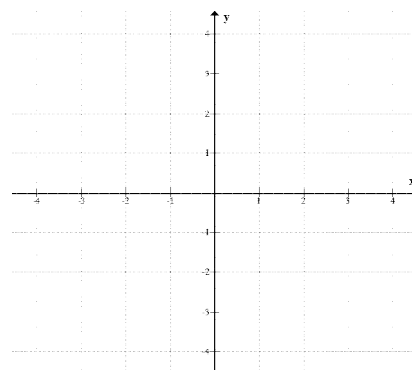Find the new equation.

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

$f(x + 2)$

$f(x - 3)$

$f(x) + 1$

$f(x) - 3$

$2f(x)$

$\frac{1}{3}f(x)$

$f\left(\frac{1}{2}x\right)$

$f(2x)$

$f(-x)$

$-f(x)$

$-f(-x)$

$f^{-1}(x)$

$f(x + 2) - 3$

$2f(2x)$

$f^{-1}(x) =$

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

C12 - 1.4 - Equation Eng. Transformations WS

Find the new equation.

$f(x) = x^2$

A vertical
translation up 2

A horizontal
translation left 4

A horizontal
translation right 1

A vertical
translation down 5

A vertical translation up 1 and
A horizontal translation left 5

A vertical translation down 1 and
A horizontal translation right 5

A vertical expansion
by a factor of 2

A vertical compression
by a factor of $\frac{1}{2}$

A horizontal compression
by a factor of $\frac{1}{2}$

A horizontal expansion
by a factor of 3

A vertical compression by a factor of 1/2 and
A vertical translation up 1

A vertical translation up 1 and
A vertical compression by a factor of 1/2

A horizontal translation left 5 and
A horizontal expansion by a factor of 2

A horizontal expansion by a factor of 2 and
A horizontal translation left 5

A vertical reflection

A horizontal reflection

Inverse

C12 - 1.4 - Equation Eng. Transformations WS

Find the new equation.

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

A vertical
translation up 2

A horizontal
translation left 4

A horizontal
translation right 1

A vertical
translation down 5

A vertical translation up 1 and
A horizontal translation left 5

A vertical translation down 1 and
A horizontal translation right 5

A vertical expansion
by a factor of 2

A vertical compression
by a factor of $\frac{1}{2}$

A horizontal compression
by a factor of $\frac{1}{2}$

A horizontal expansion
by a factor of 3

A vertical compression by a factor of 2 and
A horizontal expansion by a factor of 2

A vertical compression by a factor of 2 and
A horizontal compression by a factor of 2

A vertical compression by a factor of 2 and
A vertical translation up 1

A vertical translation up 1 and
A vertical compression by a factor of 2

A horizontal translation left 5 and
A horizontal expansion by a factor of 2

A horizontal expansion by a factor of 2 and
A horizontal translation left 5

A vertical reflection

A horizontal reflection

Inverse

C12 - 1.4 - Equation Eng. Transformations WS

Find the new equation.

$f(x) = x^2$

A vertical Reflection
A vertical compression by a factor of 2
A vertical translation up 1
A horizontal translation left 5

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

A vertical compression by a factor of 2 and
A Horizontal reflection
A vertical translation up 1
A horizontal translation left 5