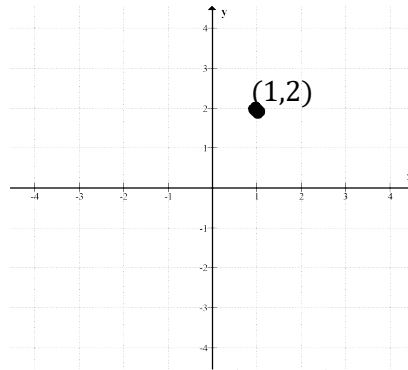


# C12 - 1.1 - VHT Points HW



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.

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

$$y = f(x) - 3$$

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

A vertical translation up 2

$$g(x) = f(x - 3)$$

$$m(x) = f(x + 2)$$

A horizontal translation right 1

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

$$y + 4 = f(x + 2)$$

$$y + 7 = f(x + 5)$$

A vertical translation up 1 and  
A horizontal translation left 5

Notice!

A horizontal translation left 5 and  
A vertical translation up 1

# C12 - 1.1 - VHT Function Notation $f(x)$ HW

Solve

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

$$f(2) =$$

$$f(-3) - 1 =$$

Find the new equation of  $@(x)$ ; a transformation of  $f(x)$  above. State the Transformation/s.

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

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

A horizontal translation left 4

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

$$k(x) + 3 = f(x)$$

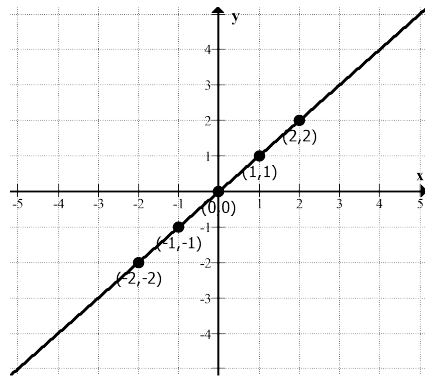
A vertical translation up 2

$$w(x) = f(x + 2) - 4$$

$$n(x) - 2 = f(x + 4)$$

A vertical translation up 1 and  
A horizontal translation left 5

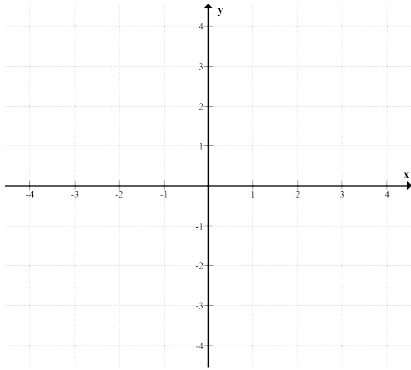
# C12 - 1.1 - VHT Graphs $y = HW$



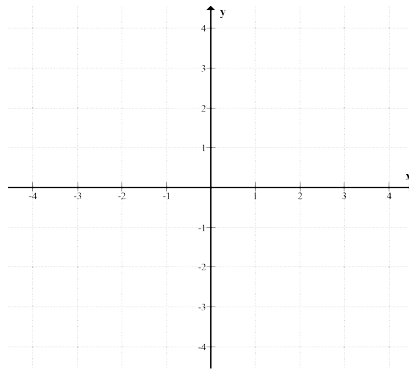
$$y = f(x)$$

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

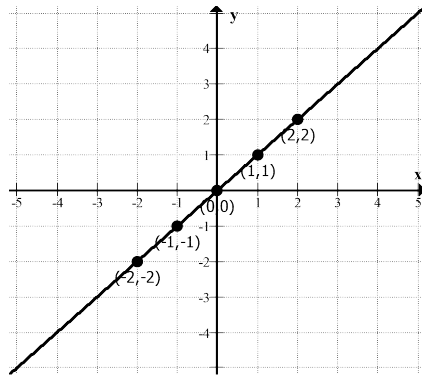
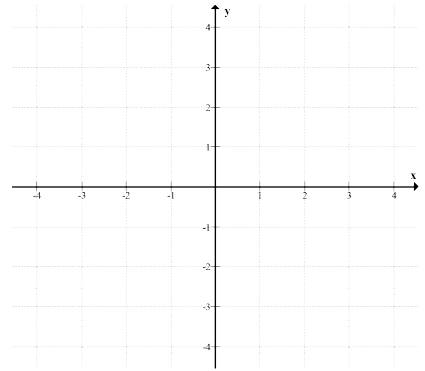
$$y = f(x) + 1$$



$$y = f(x + 2)$$



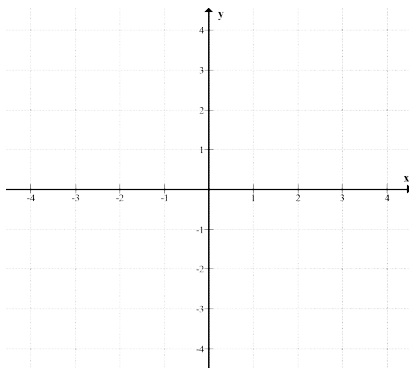
$$y = f(x - 1) + 3$$



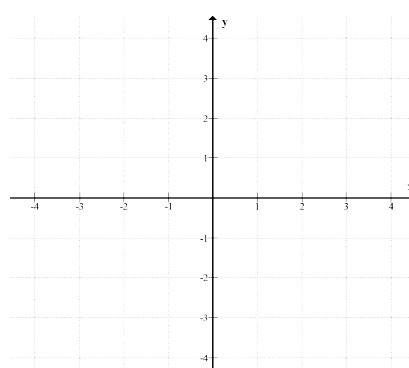
$$y = x$$

Perform the following operations on the equation and graph  $y = x$  and draw the new graph.

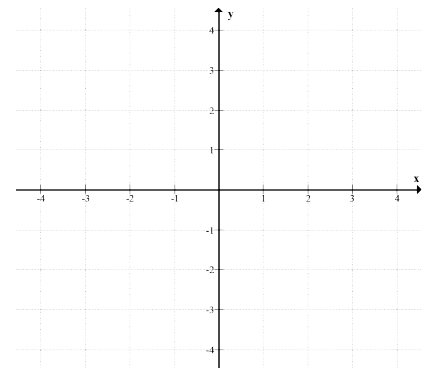
$$y = x \quad VT + 1$$



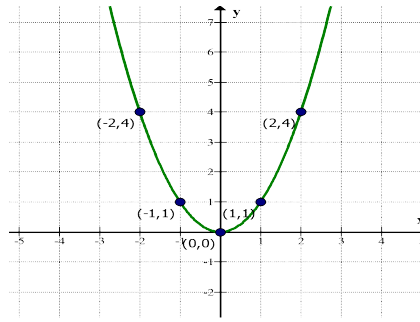
$$y = x \quad HT = -2$$



$$y = x \quad \begin{matrix} HT = +1 \\ VT = +3 \end{matrix}$$



# C12 - 1.1 - VHT Graphs $y = HW$



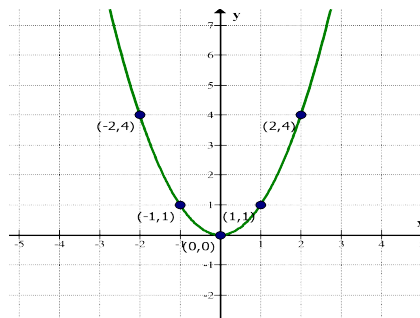
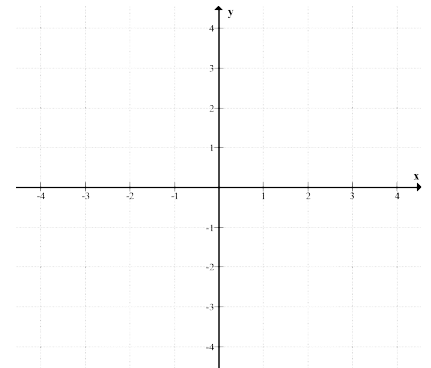
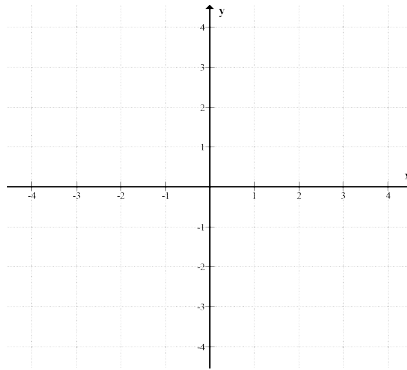
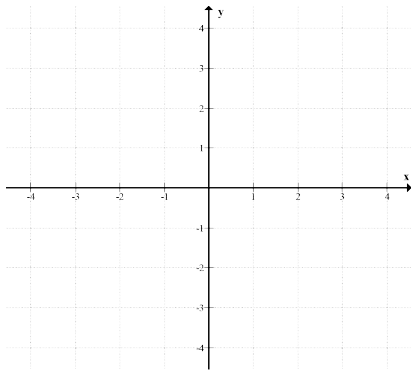
$$y = g(x)$$

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

$$y - 1 = g(x)$$

$$y = g(x + 2)$$

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



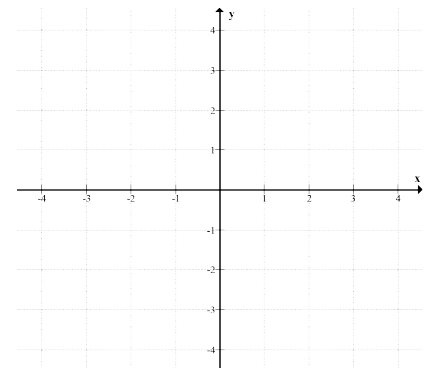
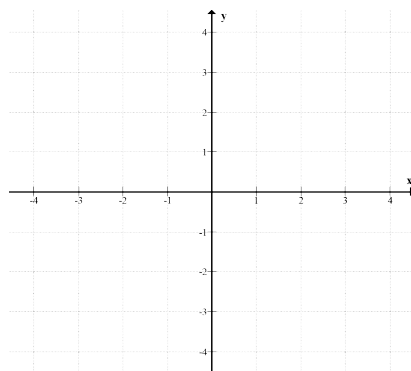
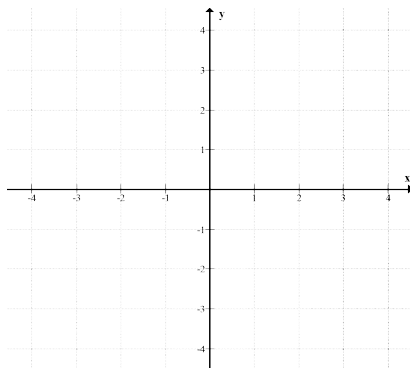
$$y = x^2$$

Perform the following operations on the equation  $y = x^2$  and draw the new graph.

$$y = x^2 \quad VT + 1$$

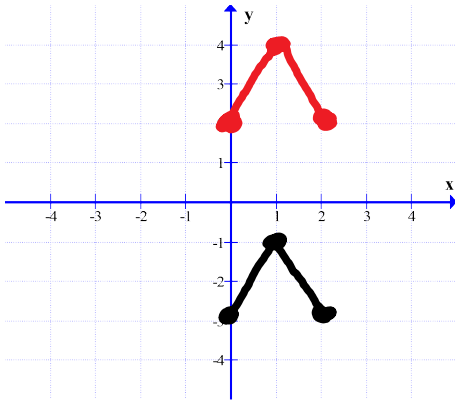
$$y = x^2 \quad HT = -2$$

$$y = x^2 \quad \begin{matrix} HT = +1 \\ VT = +3 \end{matrix}$$

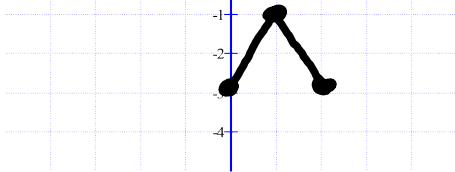


# C12 - 1.1 - VHT Graph $f(x)$ HW

Find the transformed equation of  $f(x)$  in all forms.

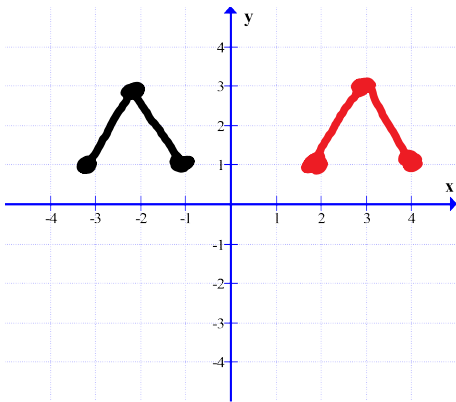


$$y = f(x)$$



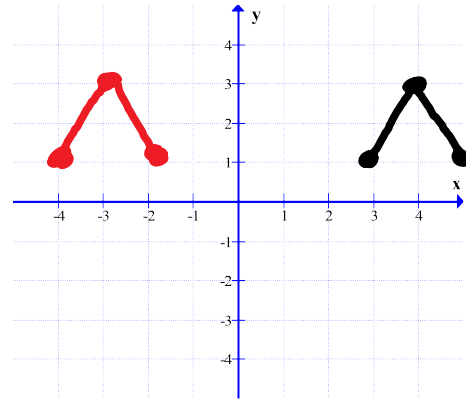
$$y = f(x) + k$$

$$y - k = f(x)$$



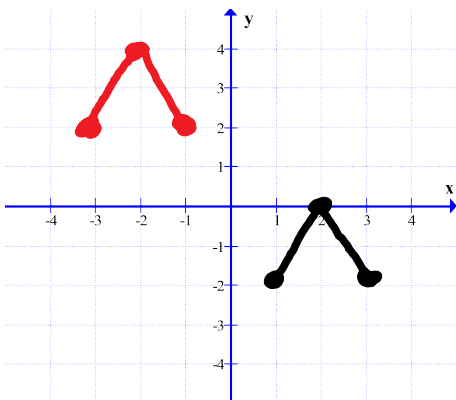
$$y = f(x)$$

$$y = f(x - h)$$



$$y = f(x - h)$$

$$y = f(x)$$

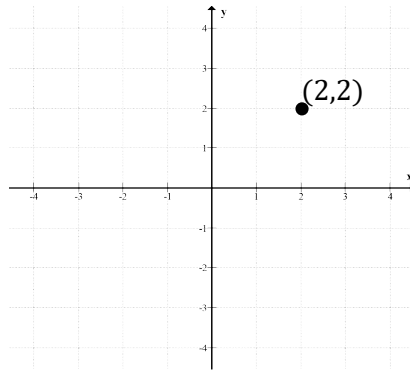


$$y = f(x)$$

$$y = f(x - h) + k$$

$$y - k = f(x - h)$$

# C12 - 1.2 - VHCER Point HW



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.

$$y = 2f(x)$$

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

$$2y = f(x)$$

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

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

$$y = f(2x)$$

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

$$y = f(3x)$$

A vertical expansion  
by a factor of 2

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

$$y = 2f(2x)$$

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

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

$$5y = f\left(\frac{1}{3}x\right)$$

$$y = 2f(5x)$$

$$y = f(-x)$$

A vertical reflection

$$-y = f(x)$$

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

# C12 - 1.2 - VHCER Function Notation $f(x)$ HW

Solve

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

$$f(-5) =$$

$$2f(5) =$$

Find the new equation of  $g(x)$ ; a transformation of  $f(x)$ . State the Transformation/s.

$$k(x) = f(2x)$$

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

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

$$k(x) = 2f(x)$$

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

A vertical expansion  
by a factor of 2

$$2g(x) = f(x)$$

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

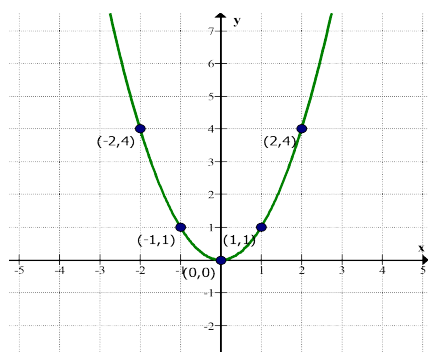
A horizontal expansion  
by a factor of 2

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

A vertical reflection

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

# C12 - 1.2 - VHCER Graphs $y = x^2$ HW



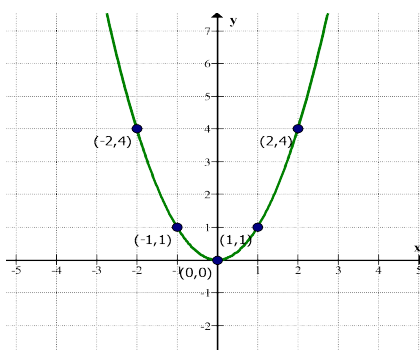
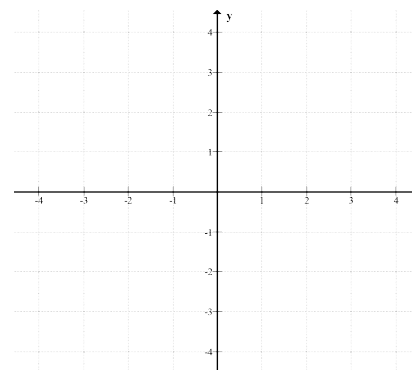
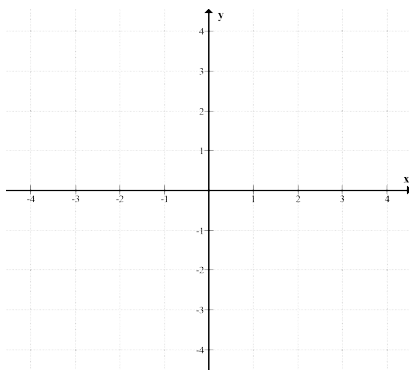
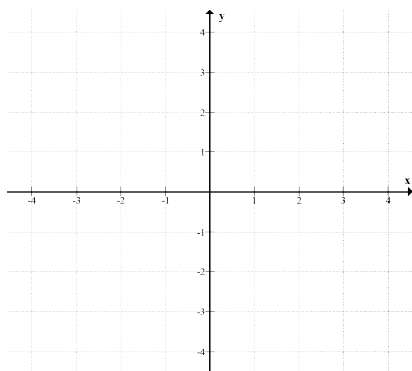
$$y = g(x)$$

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

$$y = g(2x)$$

$$y = -2g(x)$$

$$y = g(-x)$$



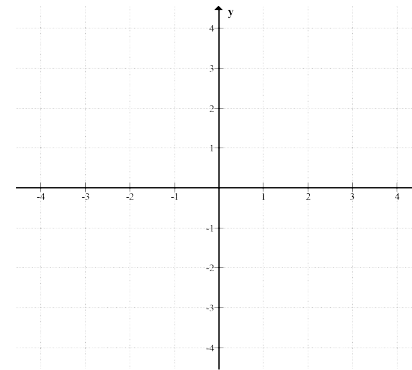
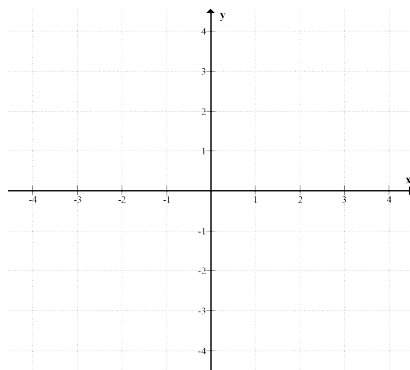
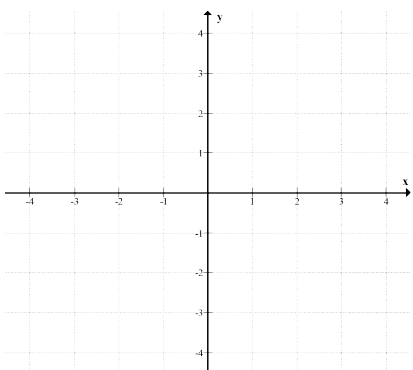
$$y = x^2$$

Perform the following operations on the equation  $y = x^2$  and draw the new graph.

$$\frac{1}{2}y = x^2$$

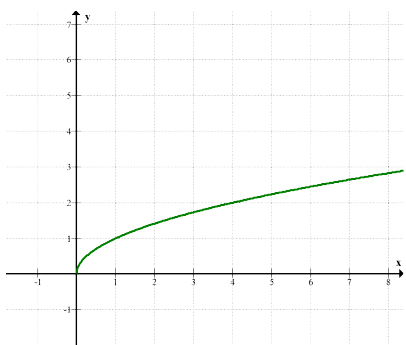
$$-y = x^2$$

$$y = (-x)^2$$





# C12 - 1.2 - VHCER Graphs $y = \sqrt{x}$ HW



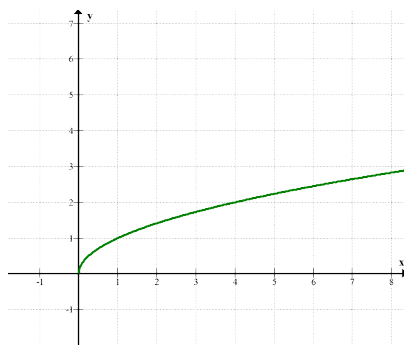
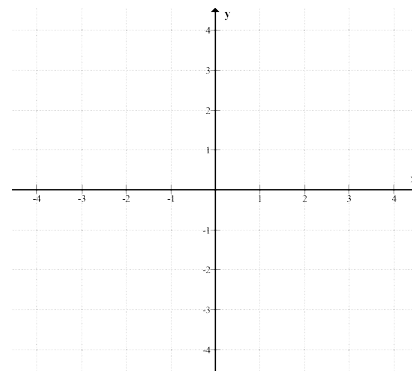
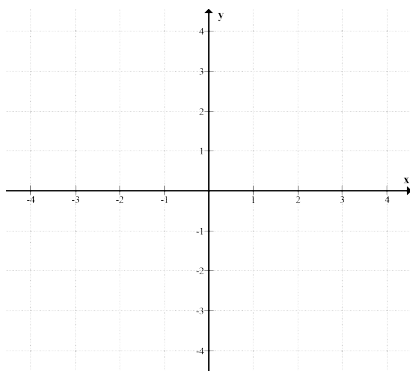
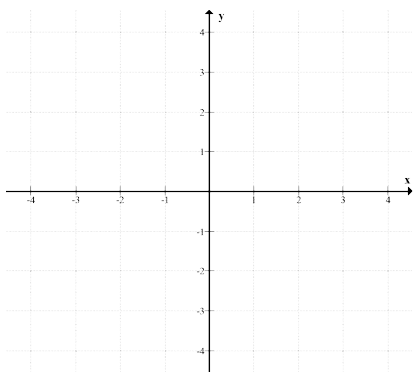
$$y = f(x)$$

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

$$y = 2f(x)$$

$$y = f(2x)$$

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



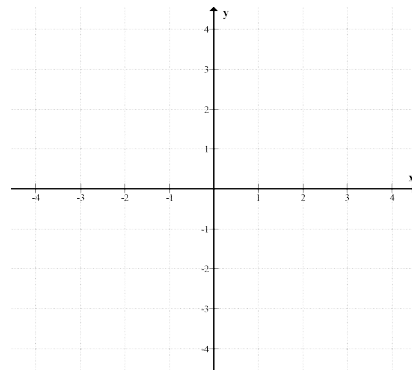
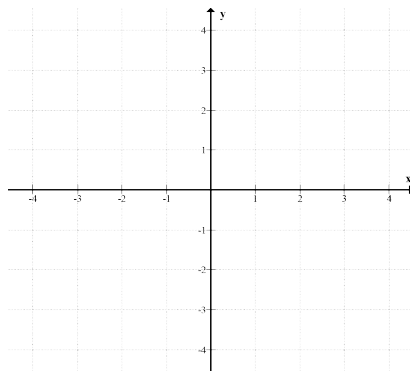
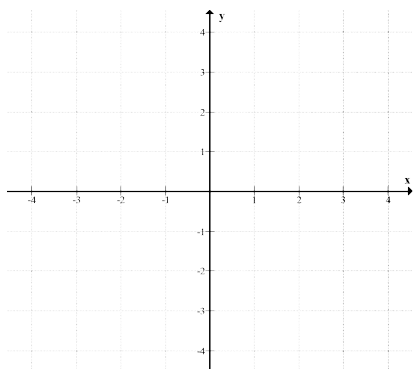
$$y = \sqrt{x}$$

Perform the following operations on the equation  $y = \sqrt{x}$  and draw the new graph.

$$y = 2f(x)$$

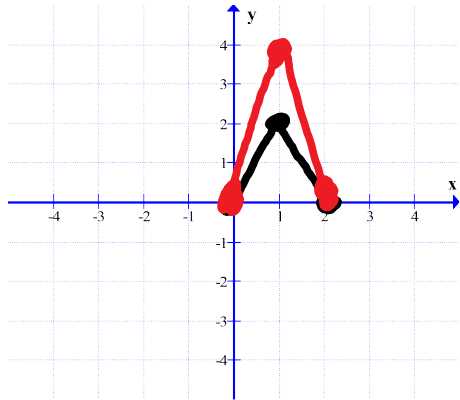
$$y = f(2x)$$

$$-y = f(x)$$



# C12 - 1.2 - VHCE Graph $f(x)$ HW

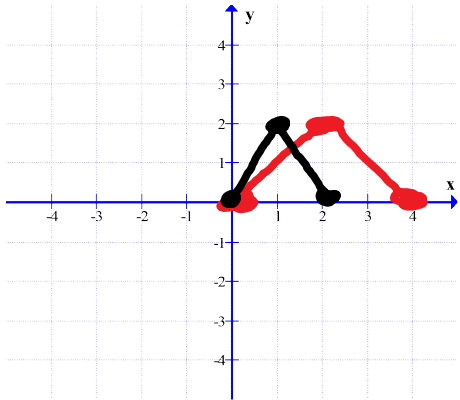
Find the transformed equation of  $f(x)$  in all forms.



$$y = f(x)$$

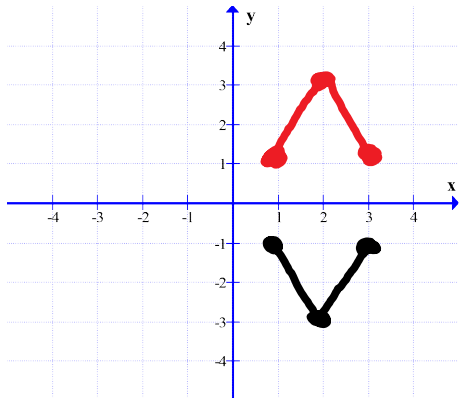
$$y = af(x)$$

$$ay = f(x)$$



$$y = f(bx)$$

$$y = f(x)$$



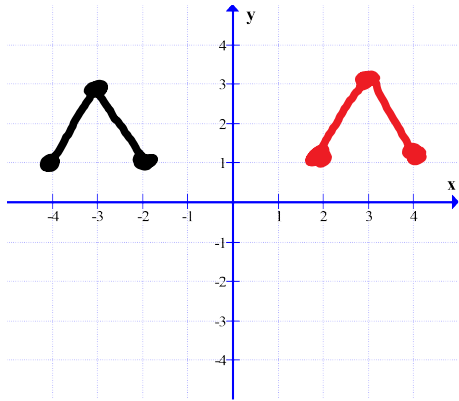
$$y = f(x)$$

$$y = af(x)$$

$$ay = f(x)$$

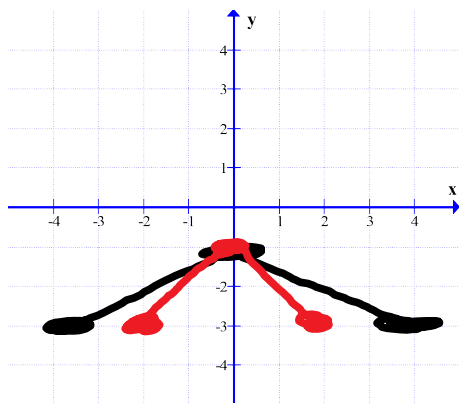
# C12 - 1.2 - VHCE Graph $f(x)$ HW

Find the transformed equation of  $f(x)$  in all forms.



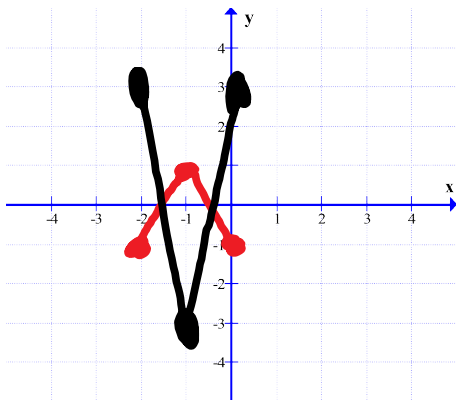
$$y = f(bx)$$

$$y = f(x)$$



$$y = f(bx)$$

$$y = f(x)$$

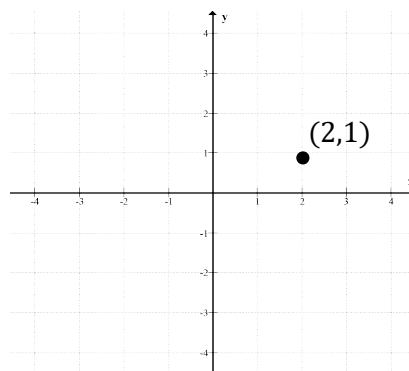


$$y = f(x)$$

$$y = af(x)$$

$$ay = f(x)$$

# C12 - 1.3 - VHTCER Point/s/Algebra/Factor/Order HW



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.

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

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

$$2y + 6 = f(x)$$

$$y = f(2(x + 3))$$

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

$$y = f(2x + 4)$$

$$y + 2 = f(2x)$$

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

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

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

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

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

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

$$y = -2f(-2x + 4) - 2$$

# C12 - 1.3 - VHTCER Function Notation $f(x)$ HW

Solve

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

$$f(-4) =$$

$$f(2) + 1 =$$

Find the new equation of  $@(x)$ ; a transformation of  $f(x)$ .

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

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

$$p(x) = f(-3x - 6)$$

$$h(x) = f(2(x - 2))$$

$$\frac{1}{2}(q(x) + 4) = f(-2x + 2)$$

# C12 - 1.3 - VHTCER $y=$ HW

Find the new equation.

$$y = x^2 + x$$

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

$$y = 4x^3 - 2x$$

A Vertical Reflection  
A vertical compression by a factor of  $\frac{1}{2}$   
A vertical translation up 1  
A horizontal translation left 5

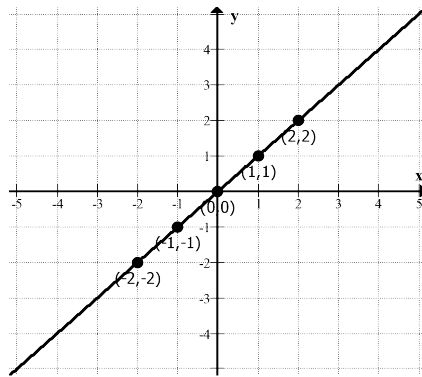
$$y = \sqrt{x}$$

A horizontal expansion by a factor of 2 and  
A Horizontal reflection  
A vertical translation up 1  
A horizontal translation right 5

$$y = |x|$$

A horizontal compression by a factor of  $\frac{1}{2}$  and  
A vertical reflection  
A vertical translation down 3  
A horizontal translation left 3

# C12 - 1.3 - VHTCER Graphs $y = HW$



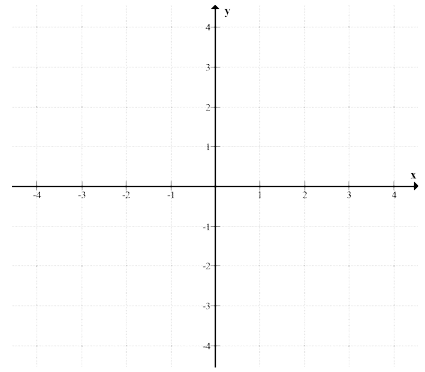
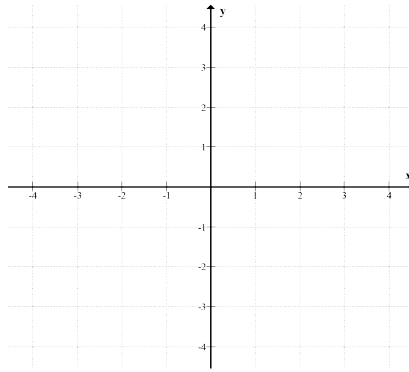
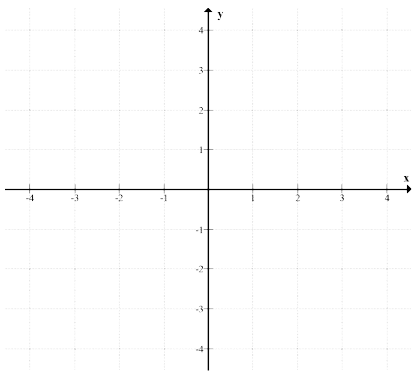
$$y = f(x)$$

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

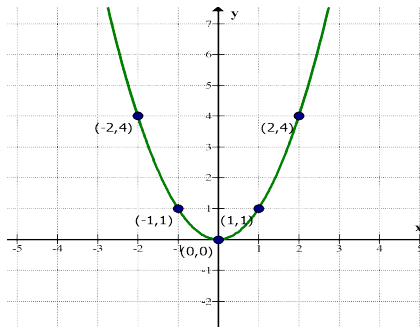
$$y - 1 = 2f(x)$$

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

$$2y = g(2x)$$



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

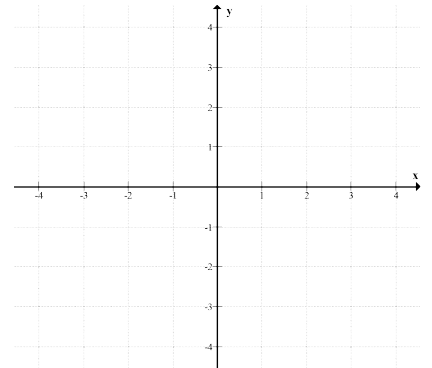
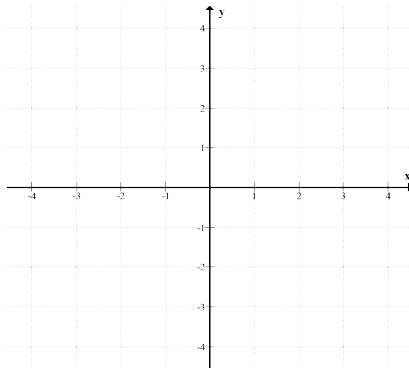
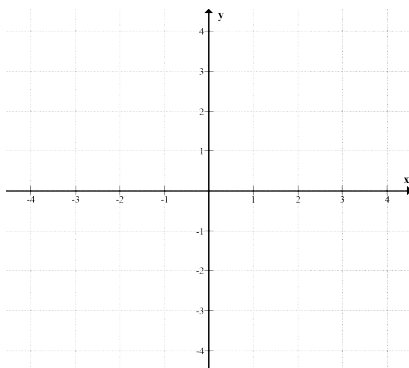


$$y = x^2$$

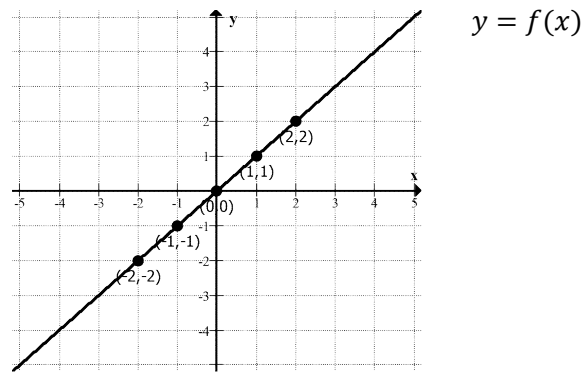
$$2y = x^2 + 6$$

$$y = (2x + 2)^2$$

$$-y = g(x)$$



# C12 - 1.3 - VHTCER Graphs $y = HW$

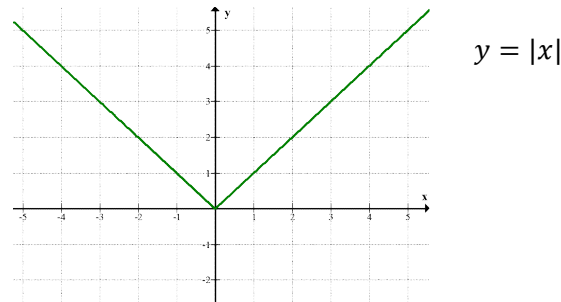
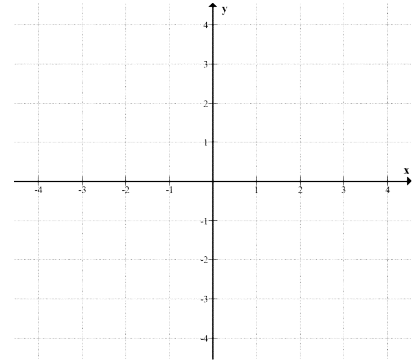
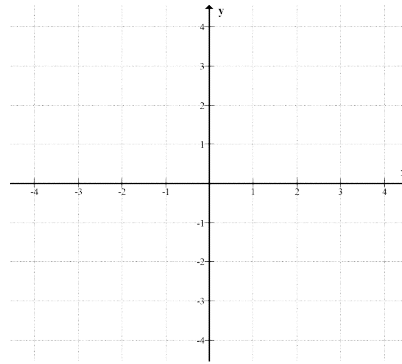
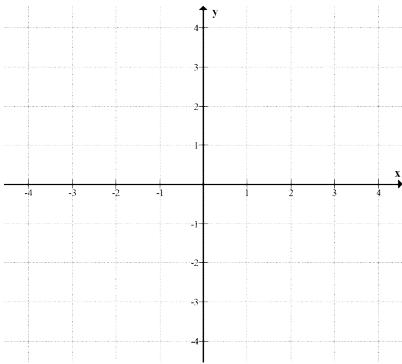


Perform the following operations on the graph  $f(x)$  and draw the new graph.

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

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

$$2y = g(2x)$$

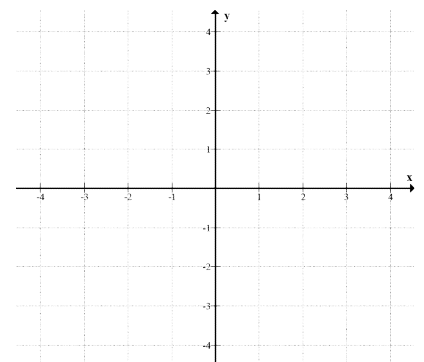
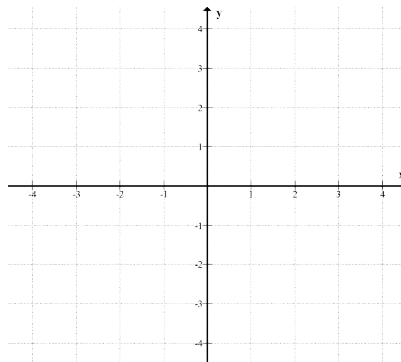
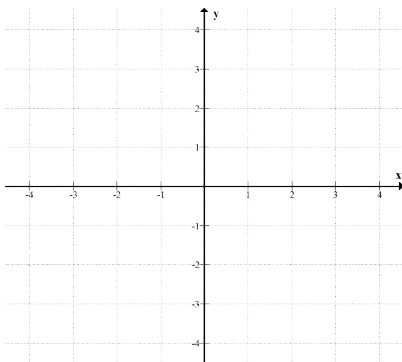


Perform the following operations on the graph  $g(x)$  and draw the new graph.

$$2y = |x| + 4$$

$$y = |2x + 4|$$

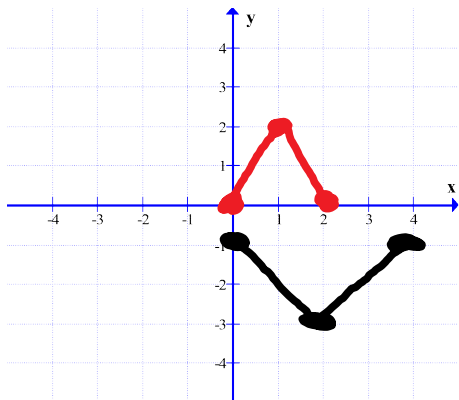
$$-y = |x|$$





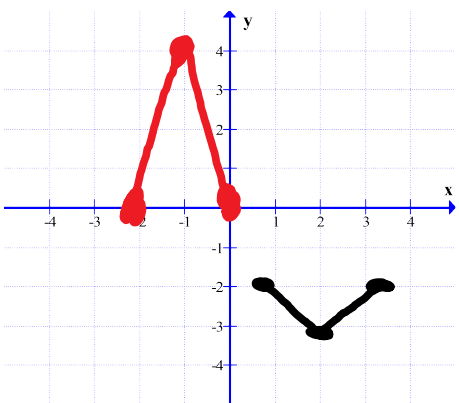
# C12 - 1.3 - VHTCER Graph $f(x)$ HW

Find the transformed equation. Multiple Solutions



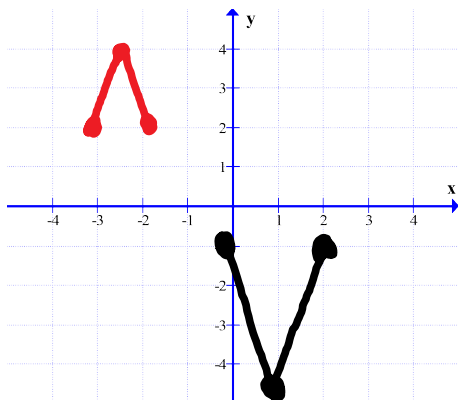
$$y = f(x)$$

$$y = af(b(x - h)) + k$$



$$y = f(x)$$

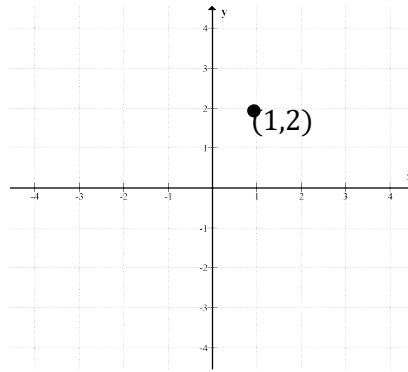
$$y = af(b(x - h)) + k$$



$$y = f(x)$$

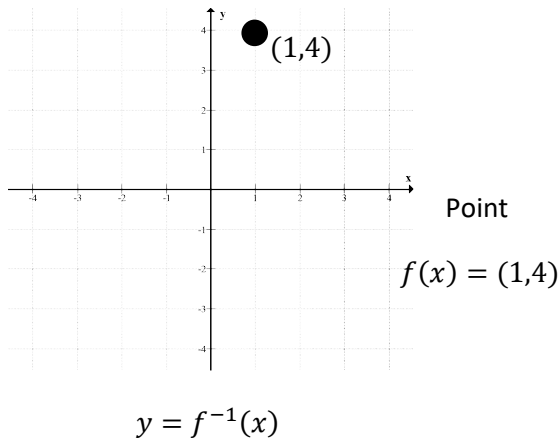
$$y = af(b(x - h)) + k$$

# C12 - 1.4 - Point $f^{-1}(x)$ Inverse 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.*



$(2, 4) \rightarrow$

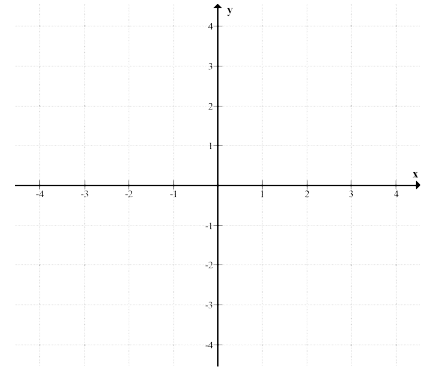
$(-1, 3) \rightarrow$

$\left(4, -\frac{1}{2}\right) \rightarrow$

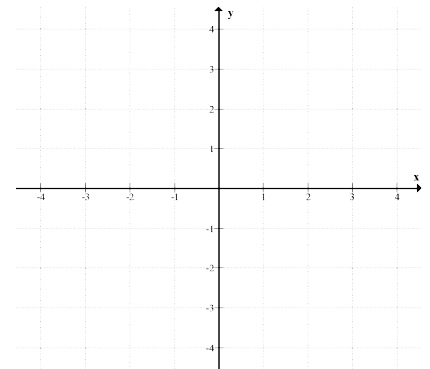
# C12 - 1.4 - Graph/Algebra $f^{-1}(x)$ Inverse HW

Find the inverse of the following function and draw both on a graph and label at least 2 points on each

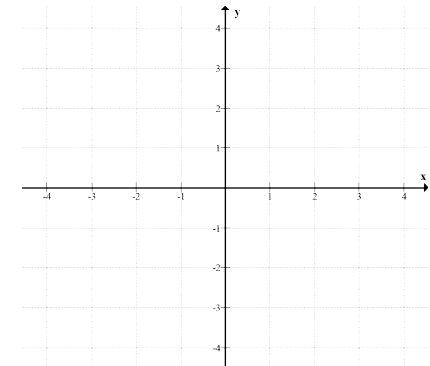
$$y = 2x - 4$$



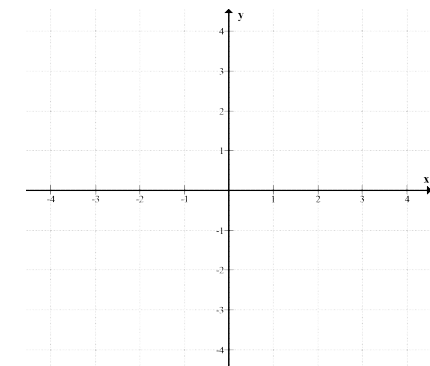
$$y = x^2$$



$$y = \frac{x}{x+2}$$



$$y = (x + 2)^2 - 4$$



# C12 - 1.5 - Order Matters Point/Functions HW

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