

Transformations Practice

$y = f(x)$ vs. $y = \pm af(\pm b(x \pm h)) \pm k$

Name _____

Describe the effect of a, b, h & k.

a: _____

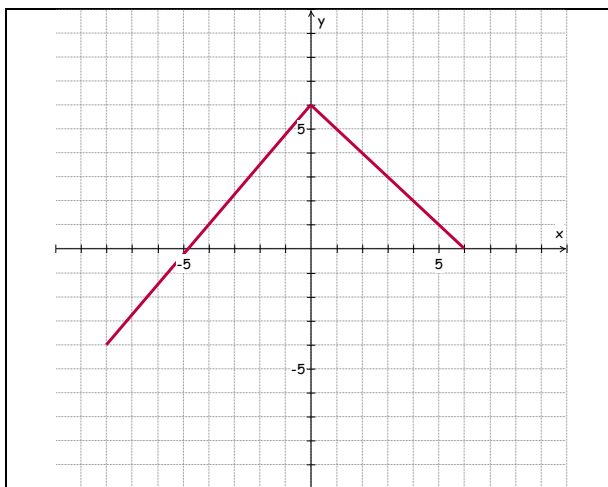
b: _____

h: _____

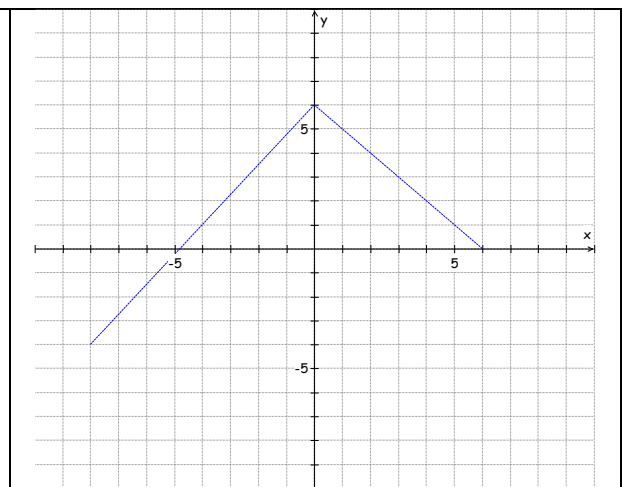
k: _____

- 1) Let $f(x) = x^2$. Shift the vertex to (5, -2). (a) Write the $f(x)$ form of the new equation. (b) Write the actual new equation. (c) Graph to check your answer.
- 2) Let $f(x) = x^2$. Turn it concave down and shift the vertex to (-3, 7). (a) Write the $f(x)$ form of the new equation. (b) Write the actual new equation. (c) Graph to check your answer.
- 3) Consider $f(x)$ shown below. Describe the transformation(s) and graph each new equation.

(a)

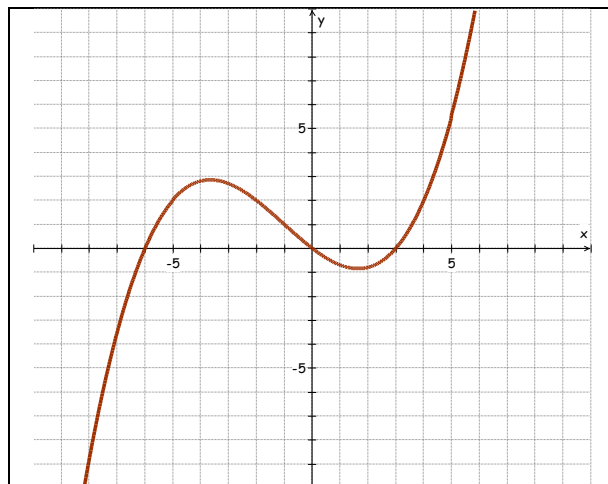


$f(x)$ is shown

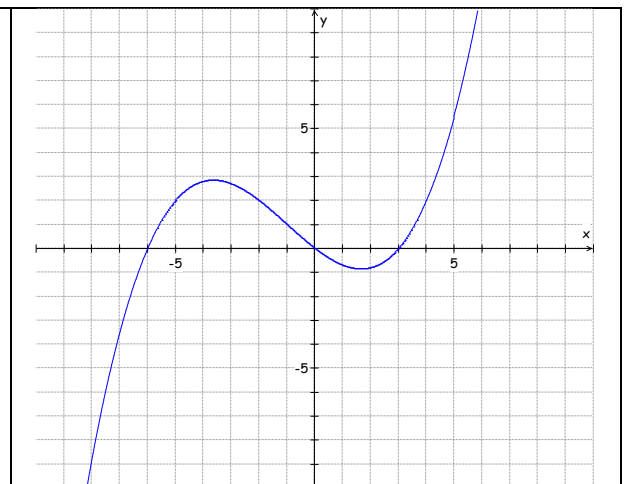


Graph $f(x-3) - 4$

(b)

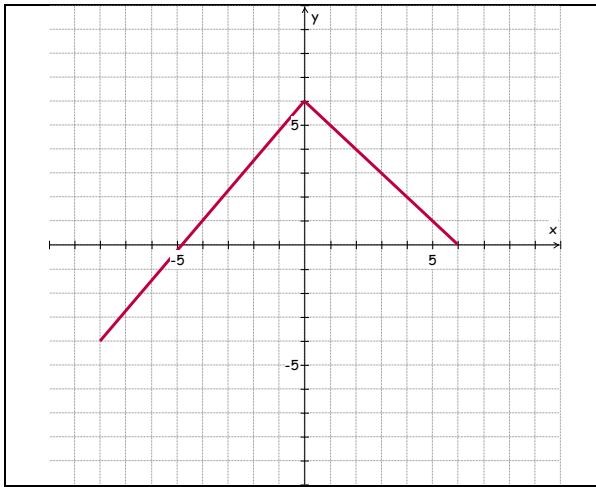


$f(x)$ is shown

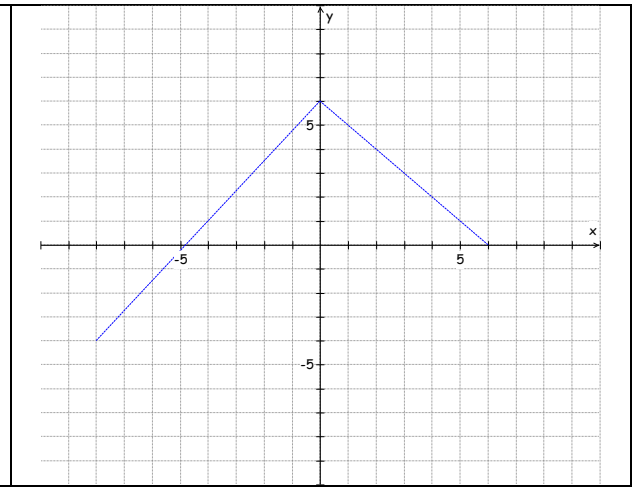


Graph $f(2x)$

(c)

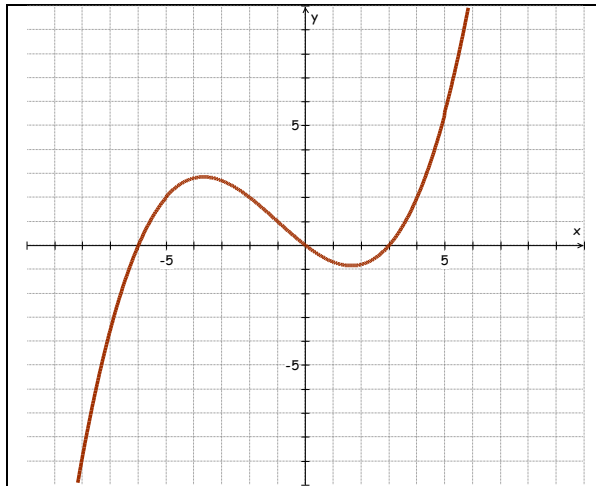


$f(x)$ is shown

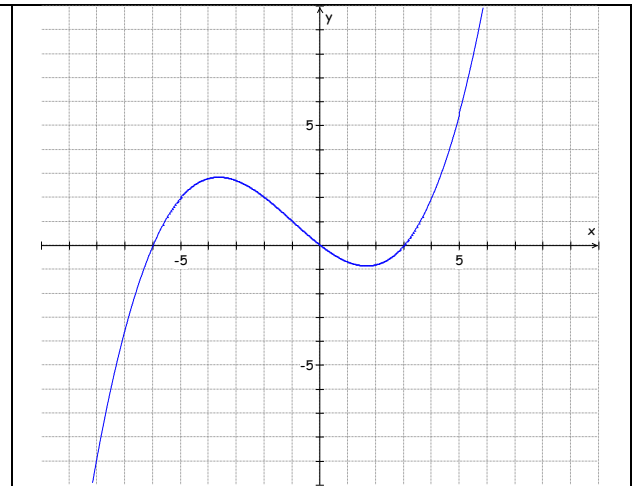


Graph $(\frac{3}{2})f(x)$

(d)

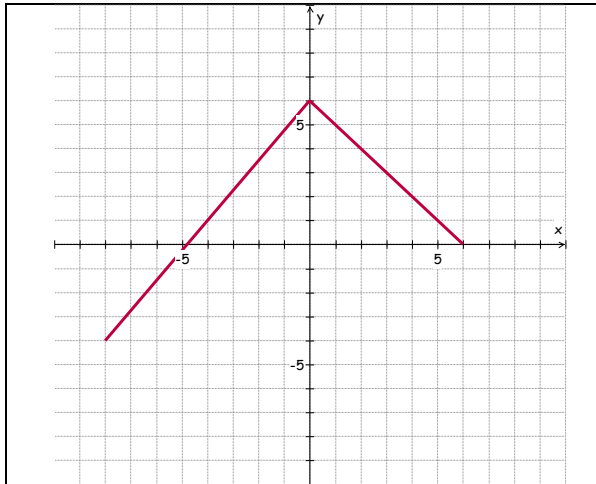


$f(x)$ is shown

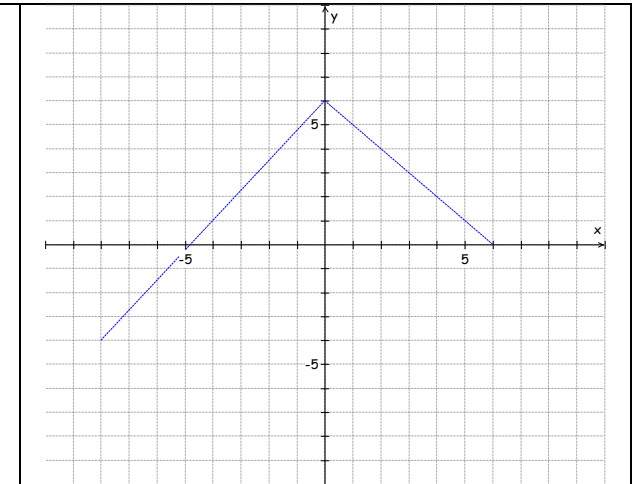


Graph $f(-2(x-4))$

(e)



$f(x)$ is shown



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

Transformations Practice

$y = f(x)$ vs. $y = \pm af(\pm b(x \pm h)) \pm k$

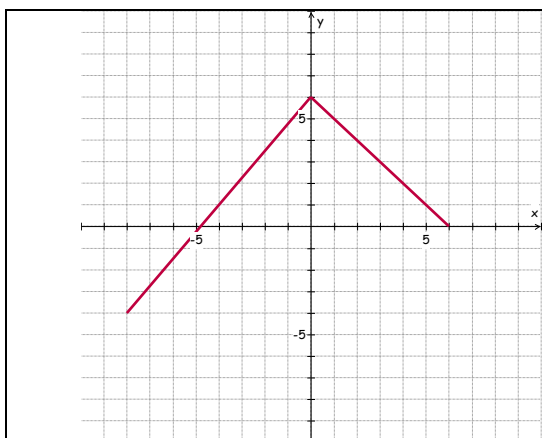
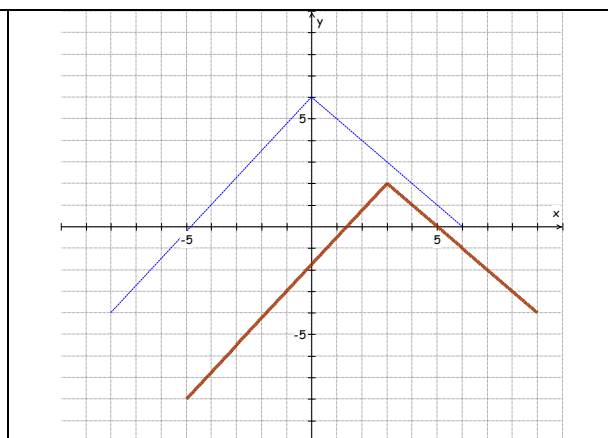
Name

KEYDescribe the effect of a , b , h & k .

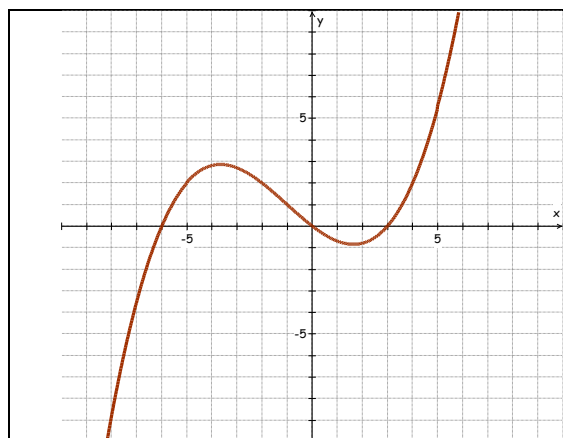
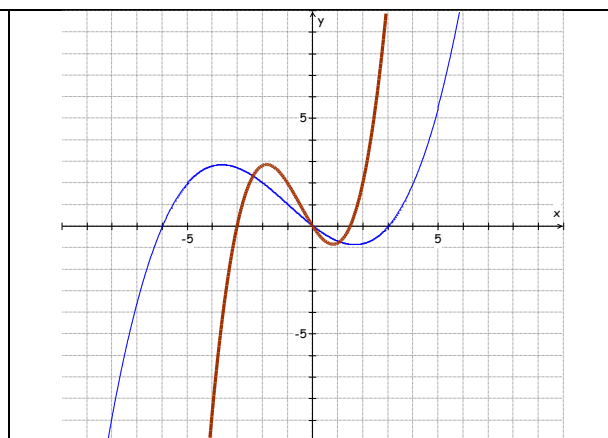
- a: Controls vertical scale. $a > 1$ stretches, $0 < a < 1$ compresses & $a < 0$ flips graph over x-axis.
- b: Controls horizontal scale. $b > 1$ compresses, $0 < b < 1$ stretches & $b < 0$ flips graph over y-axis.
- h: Controls horizontal shift. $h < 0 \rightarrow$, $h > 0 \leftarrow$. Shift occurs after stretch or compression.
- k: Controls vertical shift. $k < 0 \downarrow$, $k > 0 \uparrow$. Shift occurs after stretch or compression.

1) Let $f(x) = x^2$. Shift the vertex to $(5, -2)$.(a) Write the $f(x)$ form of the new equation. $y = f(x - 5) - 2$ (b) Write the actual new equation. $y = (x - 5)^2 - 2$ 2) Let $f(x) = x^2$. Turn it concave down then shift the vertex to $(-3, 7)$.(a) Write the $f(x)$ form of the new equation. $y = -f(x + 3) + 7$ (b) Write the actual new equation. $y = -(x + 3)^2 + 7$ 3) Consider $f(x)$ shown below. Describe the transformation(s) and graph each new equation.

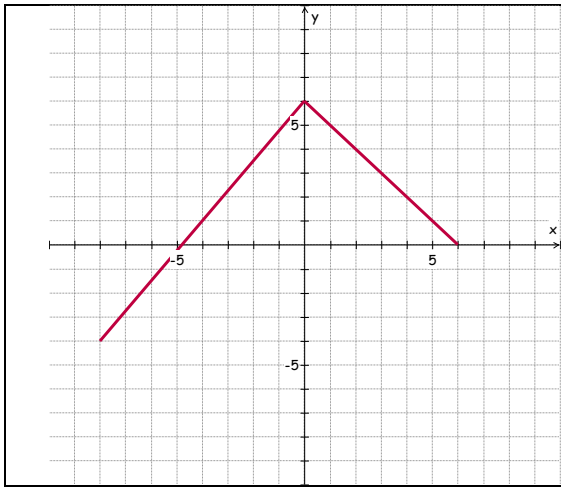
(a)

 $f(x)$ is shownGraph $f(x-3) - 4$

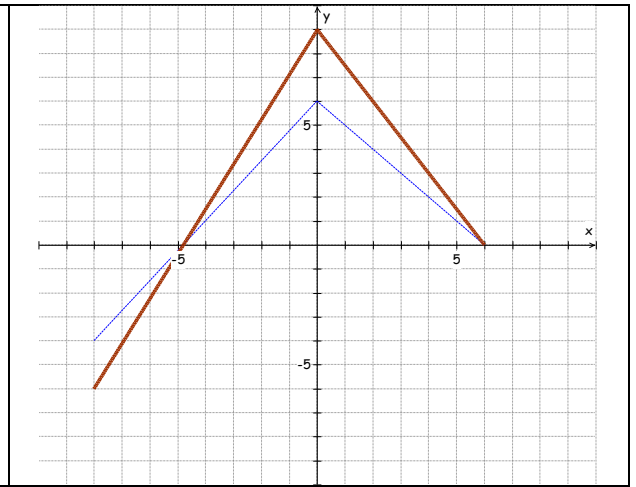
(b)

 $f(x)$ is shownGraph $f(2x)$

(c)

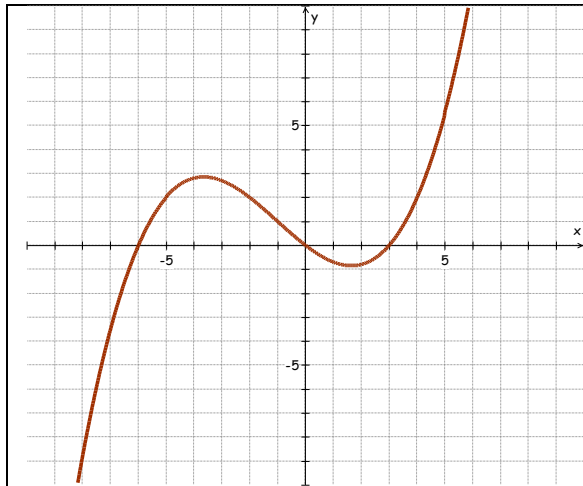


$f(x)$ is shown

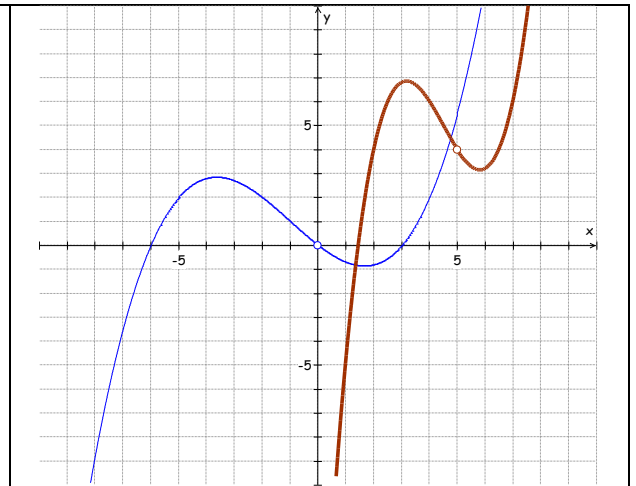


Graph $(3/2)f(x)$

(d)

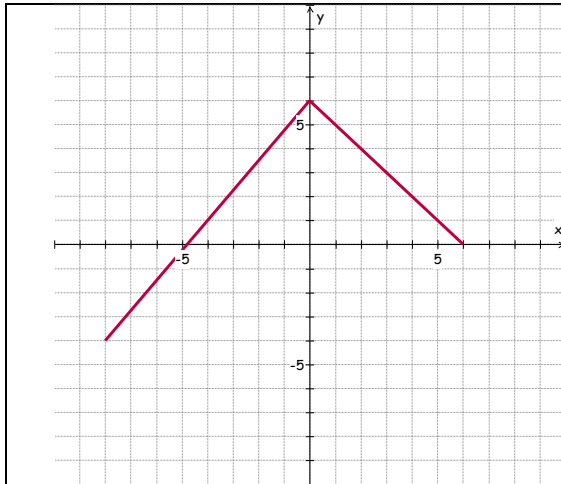


$f(x)$ is shown

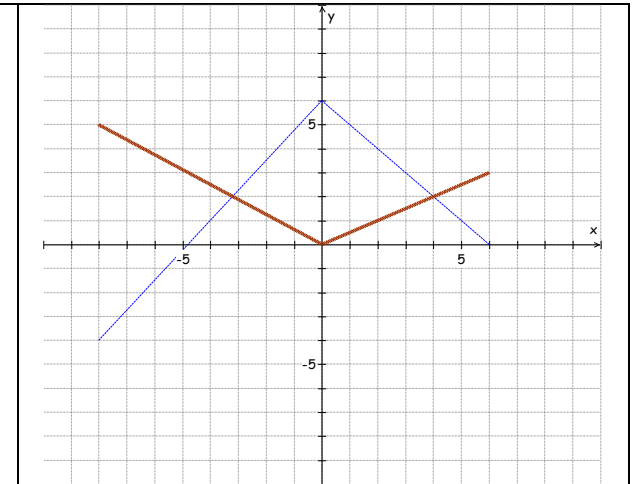


Graph $f(-2(x-4))$

(e)



$f(x)$ is shown



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