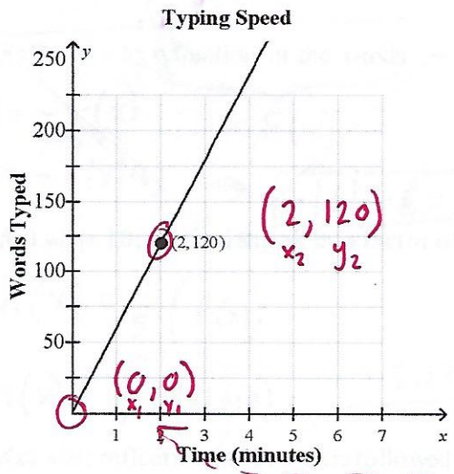
Name: SOLUTIONS Period: _____ Date: _____ ID: A

Algebra 2 Quiz 1.1-1.4

Write an equation of the line and interpret the slope.

1.



$y = mx + b$

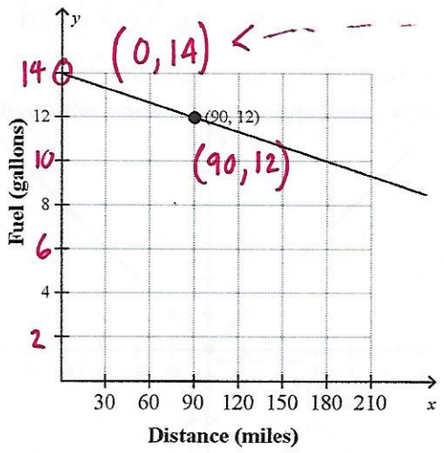
$m = \frac{120-0}{2-0} = \frac{120}{2} = 60$

b = y-intercept = y-value = 0 when $x = 0$

$y = 60x$

60 words typed per minute

2.



$b = 14$, since it's the y-intercept (y-value when $x = 0$)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12-14}{90-0} = \frac{-2}{90} = -\frac{1}{45}$

$y = -\frac{1}{45}x + 14$

Fuel decreases by $\frac{1}{45}$ gallon per mile driven

Write a function g whose graph represents the indicated transformation of the graph of f.

3. $f(x) = 2x - 7$; translation 5 units right

$h = 5$

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

$= f(x-5)$

$= 2(x-5) - 7$

$= 2x - 10 - 7$

$g(x) = 2x - 17$

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

4. $f(x) = -2|x+4| + 7$; translation 3 units down

$k = -3$

$h(x) = -2|x+4| + 7 + (-3)$

$h(x) = -2|x+4| + 4$

5. $f(x) = |x| + 6$; reflection in the x-axis — remember that a reflection about x-axis is a VERTICAL transformation, so you must multiply $f(x)$, or outputs, by -1.

$g(x) = -f(x)$ $\quad -f(x)$

$g(x) = -(|x|+6)$ → $-|x|-6 = f(x)$

6. $f(x) = |x| + 10$; vertical shrink by a factor of $\frac{1}{5}$ — $a = 1/5$

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

$h(x) = \frac{1}{5}(|x|+10)$ → DISTRIBUTE

$h(x) = \frac{1}{5}|x| + 2$

7. $f(x) = |x|$; reflection in the x-axis followed by a translation 3 units down

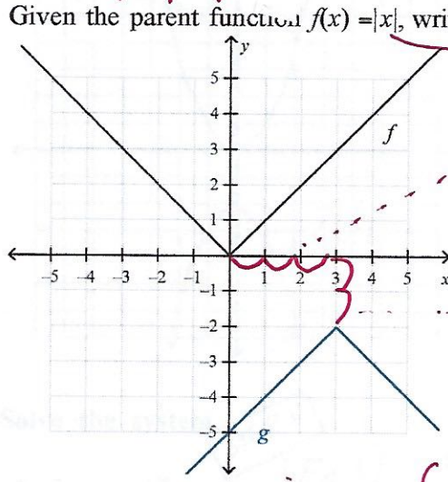
$-f(x)$ $\qquad k = -3$

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

$h(x) = -|x|$ followed by $g(x) = h(x) + k$

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

8. Given the parent function $f(x) = |x|$, write a function g whose graph is shown below.



$h = 3$

$k = -2$

$f(x) = |x|$

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

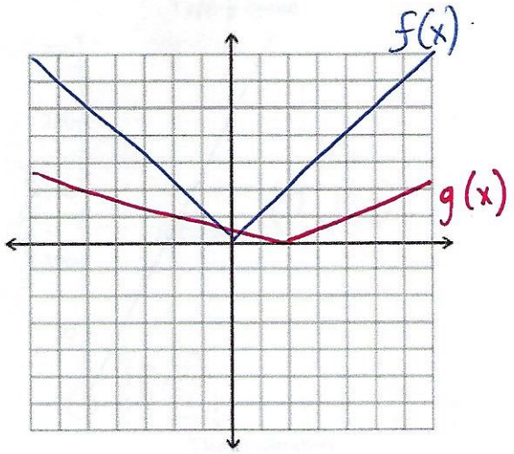
$g(x) = -|x-3| - 2$

use identified transformations

★ the image of "g" is a reflection of "f"

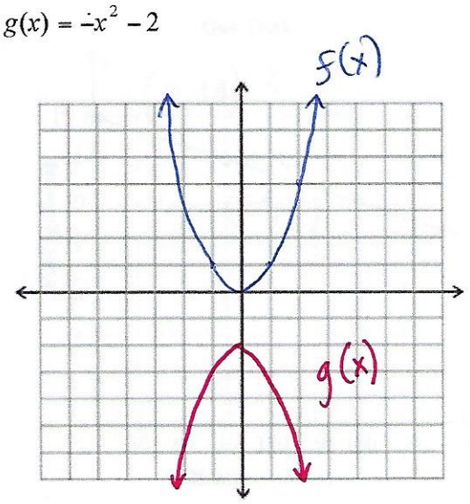
Graph the function and its parent function. Then describe the transformation.

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



- $a = \frac{1}{3}$ → V. Shrink by 1/3
- $h = 2$ → Shift right 2

10. $g(x) = -x^2 - 2$



- $a = -1$ → Reflection about x-axis
- $K = -2$ → Shift down 2 units

Solve the system.

11. $-x - 5y + z = 17$
$-5x - 5y + 5z = 5$
$2x + 5y - 3z = -10$

STEP 1

(Eq 1) $-x - 5y + z = 17$
(Eq 3) $2x + 5y - 3z = -10$
$x \quad -2z = 7$ (New Eq. 1)

(Eq 2) $-5x - 5y + 5z = 5$
(Eq 3) $2x + 5y - 3z = -10$
$-3x \quad +2z = -5$ (New Eq 2)

STEP 2

(New Eq 1) $x - 2z = 7$
(New Eq 2) $-3x + 2z = -5$
$\frac{-2x}{-2} = \frac{2}{-2} = -1 = x$

Take (New Eq. 1) with $x = -1$ to find z.

$(-1) - 2z = 7$
$\frac{-2z}{-2} = \frac{8}{-2}$
$z = -4$

STEP 3

Plug in x & z to any original equation, find "y"

(Eq. 1) $-(-1) - 5y + (-4) = 17$
$-5y - 3 = 17$
$-5y = 20$
$y = -4$

$(-1, -4, -4)$

(12) Answer = B