

Bellwork: Algebra 1

1. Write down your homework for the night in your planner.
2. Make sure you have a calculator and Algebra Nation book
3. We will check the homework from last night after the quiz.
4. Write QUIZ on your bellwork sheet for today and be ready to start when the bell rings

3. The student government association is selling roses for Valentine's Day to raise money for their trip to the state convention. The cost of each rose is \$1.50 and the florist charges a delivery fee of \$25. The class plans to sell the roses for \$5.00 each.

a. Define the variable. $x = \text{roses}$

b. Write a cost function. $C(x) = 1.50x + 25$

c. Write a revenue function.
 $R(x) = 5x$

d. Write a profit function.

$$P(x) = 5x - (1.50x + 25)$$

$$P(x) = 5x - 1.50x - 25$$

$$P(x) = 3.5x - 25$$

4. Anna gets paid \$8.75/hour working as a barista at Coffee Break. Her boss pays her \$9.00/hour for creating the weekly advertisement signs. She works a total of 25 hours each week.

- a. Let x represent the hours that Anna works each week as a barista. Write a function $h(x)$ to represent the amount of money that Anna earns working as a barista.

$$h(x) = 8.75x$$

- b. Write a function, $f(x)$ to represent the hours Anna works creating the signs.

$$f(x) = 25 - x$$

- c. Let s represent the number of hours that Anna works creating the signs. Create a function $g(s)$ to represent the money Anna earns creating the signs.

$$g(s) = 9s$$

- d. Find $g(f(x))$. What does this composite function represent?

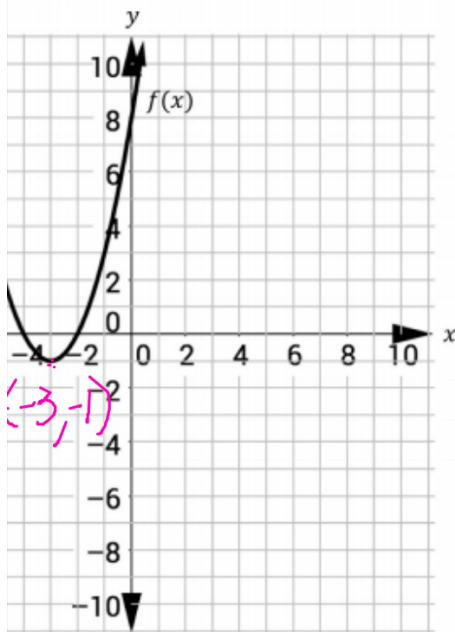
$$g(f(x)) = 9(25 - x) \text{ How much money she makes creating advertisements.}$$

- e. What functions could be combined to represent Anna's total earnings? Combine the functions to write an expression that can be used to represent Anna's total earnings, where x represents the number of hours she works as a barista.

$$\begin{aligned} h(x) + g(f(x)) &= 8.75x + 9(25 - x) \\ &= 8.75x + 225 - 9x \\ &= 225 - 0.25x \end{aligned}$$

Section 3 – Topic 10
Transformations of Functions

shown below.



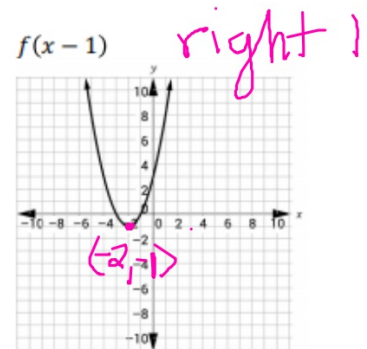
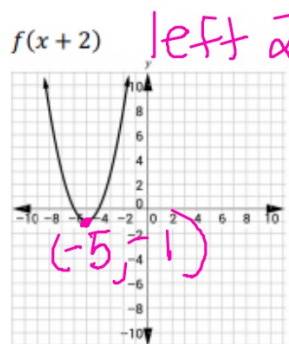
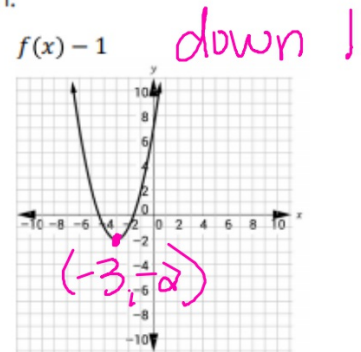
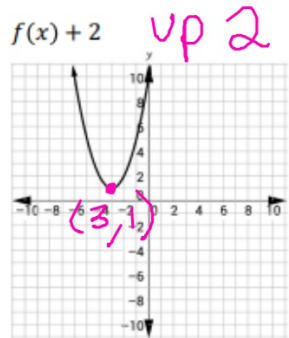
transformed the independent variable?

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

transformed the dependent variable?

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

The following graphs are transformations of $f(x)$. Describe what happened in each graph.



Let's Practice!

1. For the following functions, state whether the independent or dependent variable is being transformed and describe the transformation (assume $k > 0$).

a. $f(x) + k$

• up k units; dependent

b. $f(x) - k$

• down k units; dependent

c. $f(x + k)$

• left k units; independent

d. $f(x - k)$

• right k units; independent

2. The following table represents the function $g(x)$.

$$g(x-3)$$

x	$g(x)$
-2	0.25
-1	0.5
0	1
1	2
2	4

x	$h(x)$
1	0.25
2	0.5
3	1
4	2
5	4

The function $h(x) = g(2x)$. Complete the table for $h(x)$.

x	$g(2x)$	$h(x)$
-1	$g(2(-1))$	
-0.5	$g(2(-0.5))$	
0		
0.5		
1		

$$g(2x)$$

x	$f(x)$
-1	0.25
-0.5	0.5
0	1
0.5	2
1	4

Try It!

3. The table below shows the values for the function $f(x)$.

x	-2	-1	0	1	2
$f(x)$	4	2	0	2	4

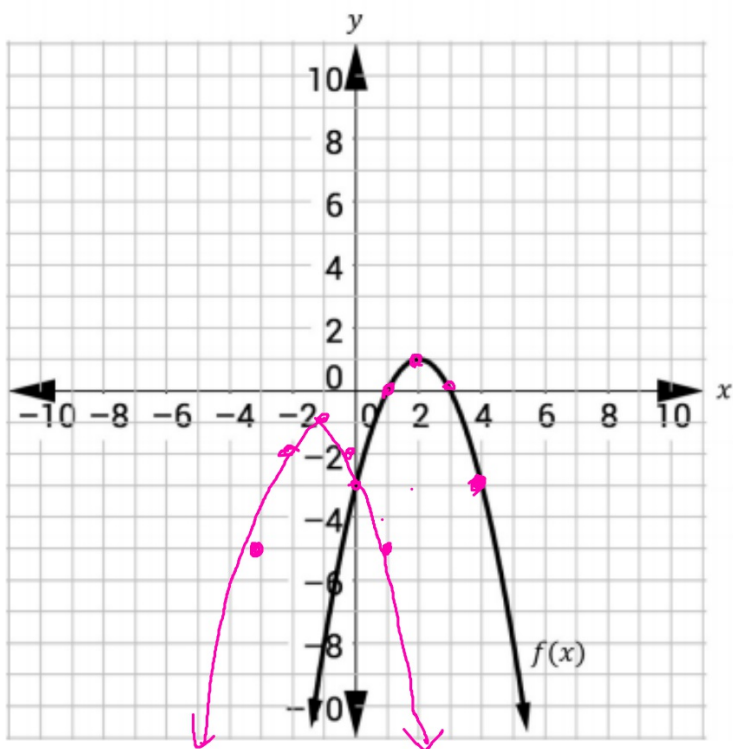
-0.5

Complete the table for the function $-\frac{1}{2}f(x)$.

x	$-\frac{1}{2}f(x)$
-2	-2
-1	-1
0	0
1	-1
2	-2

$4(-\frac{1}{2})$

4. The graph of $f(x)$ is shown below.



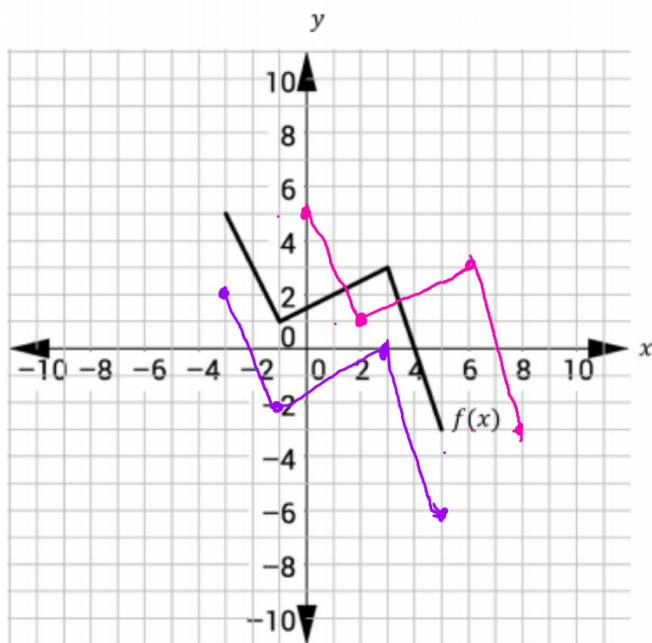
Let $g(x) = f(x + 3) - 2$.

Graph $g(x)$ on the coordinate plane with $f(x)$.

BEAT THE TEST!

piecewise

1. The graph of $f(x)$ is shown below.



Let $g(x) = f(x - 3)$ and $h(x) = f(x) - 3$.

Graph $g(x)$ and $h(x)$ on the coordinate plane with $f(x)$.

2. The table below shows the values for the function $p(x)$.

x	-4	-1	0	2	3
$p(x)$	12	6	4	8	10

Complete the table for the function $\frac{1}{2}p(x) - 3$.

x	$\frac{1}{2}p(x) - 3$
-4	3
-1	0
0	-1
2	1
3	2

