Graph Transformations

graph activity

Identify the shift of the following function

1

$$f(x) = \sqrt{x-6}$$

a) Left 6

$$f(x) = \begin{cases} x-4 & \text{if } -5 \le x \le 6 \\ (x+6)^2 - 4 & \text{if } -6 \le x \le 4.8 \end{cases}$$

b) Up 6

$$f(x) = \begin{cases} x+4 & \text{if } -5 \le x \le 5 \\ -(x-6)^2 - 4 & \text{if } -6 \le x \le \end{cases}$$

c) Right 6

$$f(x) = \begin{cases} x+4 & \text{if } -5 \le x \le \\ -(x+6)^2 - 4 & \text{if } -6 \le x \le \end{cases}$$

d) Down 6

$$f(x) = \begin{cases} x-4 & \text{if } -4 \le x \\ -(x+6)^2 + 4 & \text{if } -6 \le \end{cases}$$

Identify the sh... following fun...

2

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

a) Down 3

$$f(x) = \begin{cases} 2x-3 & \text{if } -7 \le x \le 2 \\ 4x+12 & \text{if } -3 \le x \le -4 \end{cases}$$

b) Right 3

$$f(x) = \begin{cases} \frac{1}{2}x+3 & \text{if } -3 \le x \le -2 \\ 4x-12 & \text{if } -2 \le x \le -2.6 \end{cases}$$

Identify the shift of the following function

6

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

a) Left 3, Up 8

$$f(x) = \begin{cases} 11x & \text{if} \\ \frac{x^2}{3} + x + 4 & \end{cases}$$

b) Right 3, Down 8

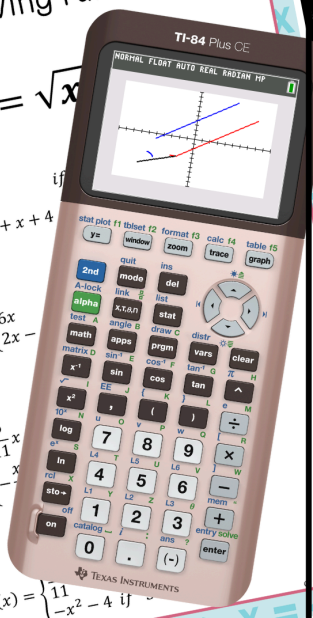
$$f(x) = \begin{cases} 6x & \\ 2x - & \end{cases}$$

c) Left 3, Down 8

$$f(x) = \begin{cases} \frac{6}{11}x & \\ -x & \end{cases}$$

d) Left 8, Up 3

$$f(x) = \begin{cases} 11 & \\ -x^2 - 4 & \text{if} \end{cases}$$



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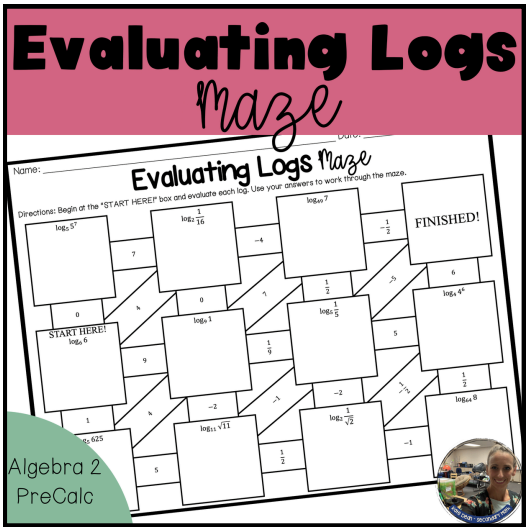
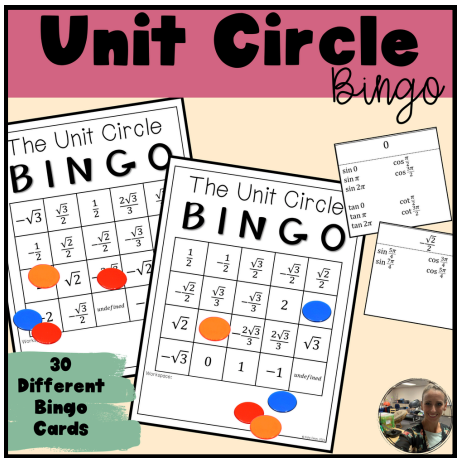
FREE Bonus Activity!

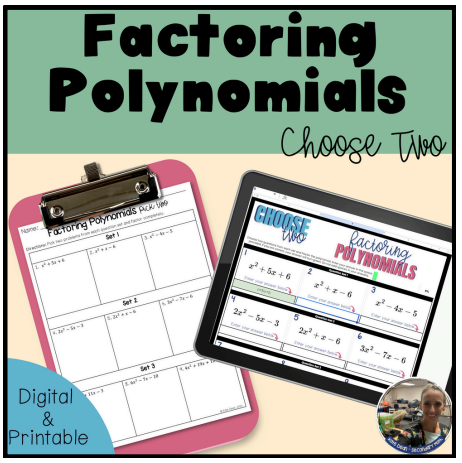


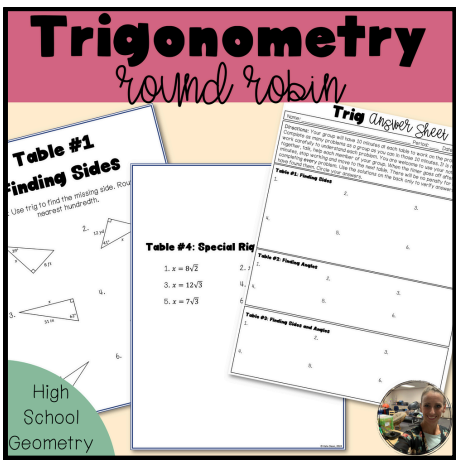
Give students extra practice evaluating Logs with this self-checking maze activity.

Get it now!

You may also like:







These activities pair perfectly with your current factoring unit, or they can make a great spiral review later in the school year. Click the images above to learn more about each activity.

Graph Transformations

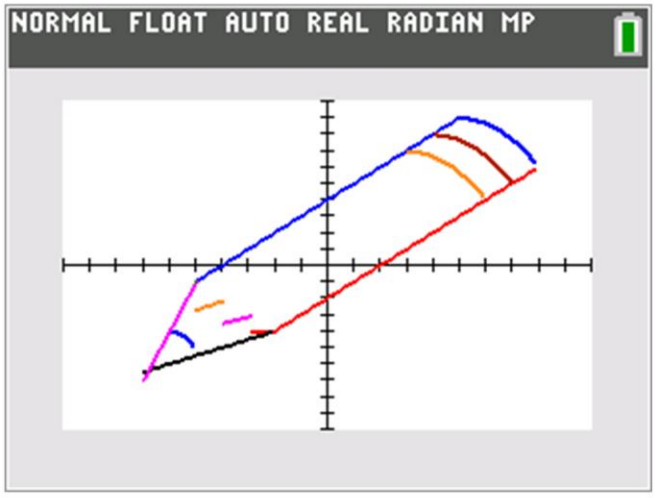
Graph Activity

Supplies

1) Stations printed and hung around room
2) TI Graphing Calculator
3) Optional student answer sheet

Teacher Directions

1) Print each station and laminate or put in a sheet protector and hand them around the room.
2) Students can work alone or in groups/pairs.
3) Students can start at any station and work through each problem in any order.
4) As they answer questions, they will graph the corresponding piecewise function on their calculator.
5) When they are done, and if they have answered all questions correctly, they will have a fun picture graphed.
6) Students can change the colors of the lines to make their image unique.

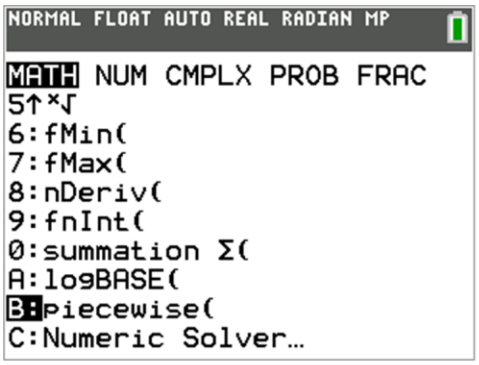


Graph Transformations

Graph Activity

TI-84 Plus CE Directions

1) Press "y=" then "math" and the down arrow to **B:piecewise(** and hit "enter".

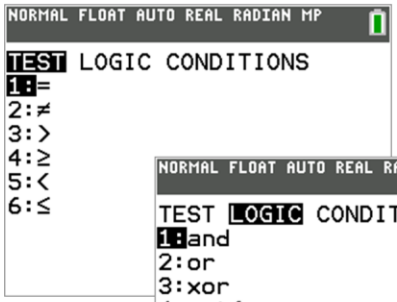


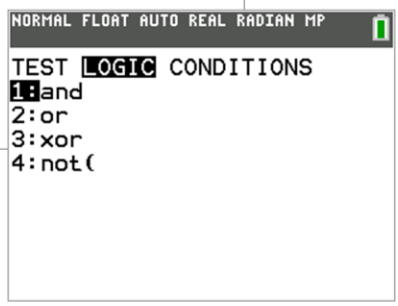
2) Use the left or right arrows to determine how many pieces are in each piecewise function. For this activity, it will be either 1 or 2 per question.

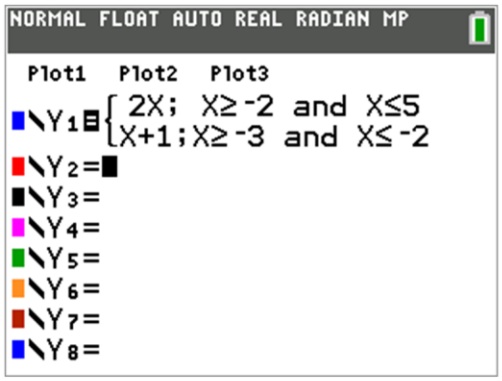
3) To enter the function

$$f(x) = \begin{cases} 2x \ \ if \ \ -2 \le x \le 5 \\ x+1 \ \ if \ \ -3 \le x \le -2 \end{cases}$$

enter "2x" in the first box, then hit the right arrow. Then type "x", "2nd", "math" and "≥" (or 4), and "-2". Then "2nd" "math", then the right arrow to Logic and press "enter". Then press "x", 2nd", "math" and "≥" (or 6), and "5". Press the down arrow and repeat for the second function. Your screen should look like the image at right.







4) After entering all piecewise functions, press "graph" to view your function.

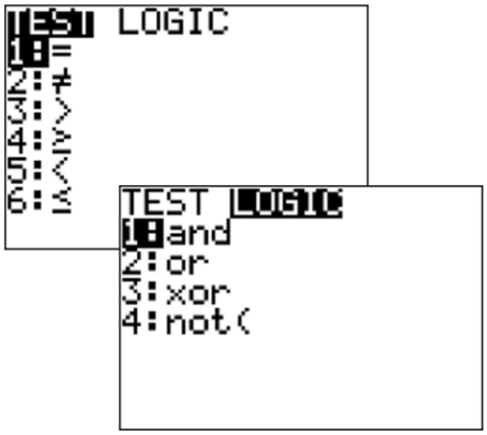
Graph Transformations

Graph Activity

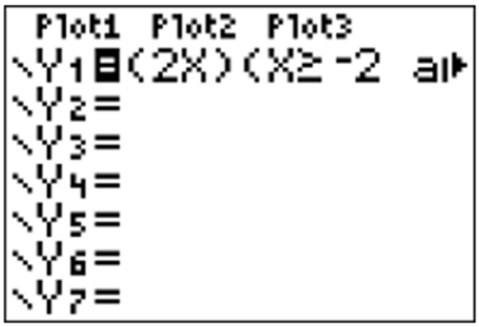
TI-84 Plus Directions

1) Press "y="

2) To graph the function $f(x) = \begin{cases} 2x \ \ if \ \ -2 \le x \le 5 \\ x+1 \ \ if \ \ -3 \le x \le -2 \end{cases}$ type "(2x)(x", then "2nd", "math" and "≥" (or 4), and "-2". Then "2nd" "math", then the right arrow to Logic and press "enter". Then press "x", 2nd", "math" and "≥" (or 6), and "5".

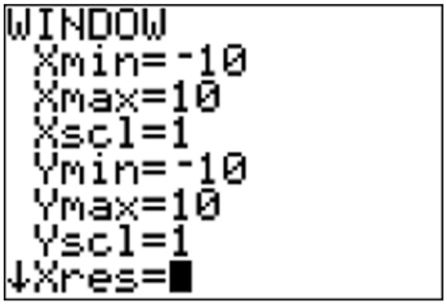


3) Then press "+" to start entering your second function. When done, your screen should look something like the image at right.



4) After entering all piecewise functions, press "graph" to view your function.

Tip: Be sure your window is set to -10 to 10 for both the x- and y-axis

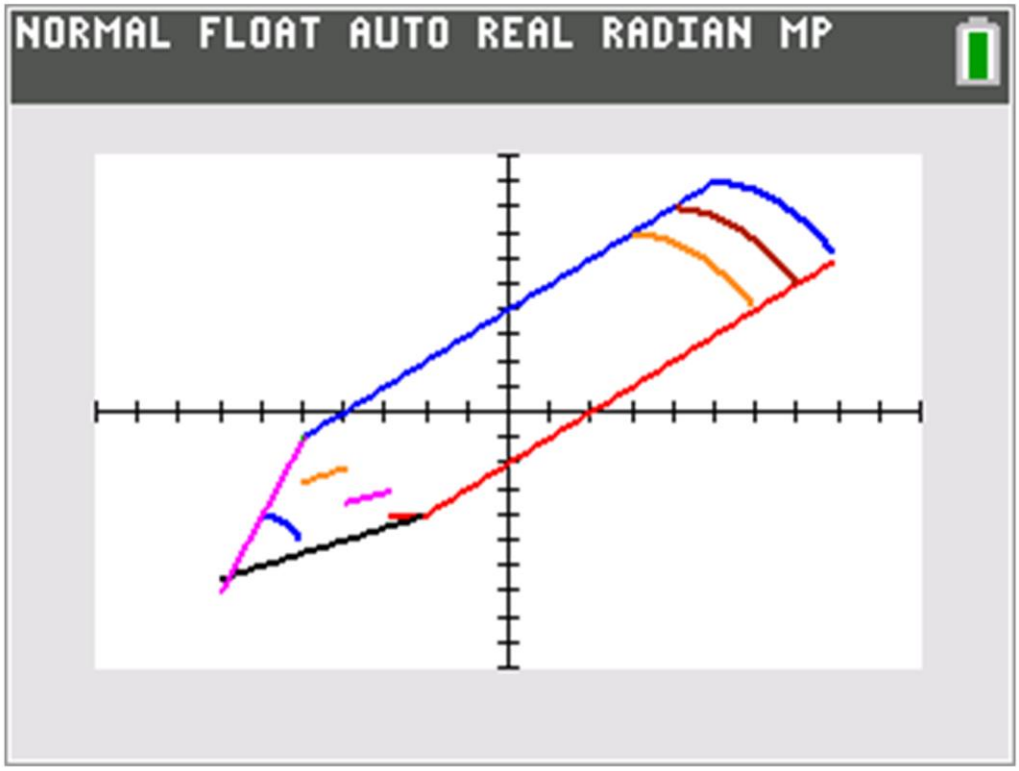


Graph Transformations

Graph Activity

Answer Key

1) c
2) d
3) c
4) d
5) b
6) c
7) d
8) a



Non-Background Version

Identify the shift of the following function

$$f(x) = \sqrt{x-6}$$

a) Left 6

$$f(x) = \begin{cases} x-4 & if \ -5 \le x \le 6 \\ (x+6)^2 - 4 & if \ -6 \le x \le 4.8 \end{cases}$$

b) Up 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x-6)^2 - 4 & if \ -6 \le x \le 7 \end{cases}$$

c) Right 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x+6)^2 - 4 & if \ -6 \le x \le -4.8 \end{cases}$$

d) Down 6

$$f(x) = \begin{cases} x-4 & if \ -4 \le x \le 8 \\ -(x+6)^2 + 4 & if \ -6 \le x \le -4.8 \end{cases}$$

Identify the shift of the following function

$$\boldsymbol{f(x) = |x| + 3}$$

a) Down 3

$$f(x) = \begin{cases} 2x - 3 & if \ -7 \leq x \leq 2 \\ 4x + 12 & if \ -3 \leq x \leq -4 \end{cases}$$

b) Right 3

$$f(x) = \begin{cases} \frac{1}{2}x + 3 & if \ -3 \leq x \leq -2 \\ 4x - 12 & if \ -2 \leq x \leq -2.6 \end{cases}$$

c) Left 3

$$f(x) = \begin{cases} 2x + 3 & if \ -7 \leq x \leq -2 \\ -4x - 12 & if \ -2 \leq x \leq -0.6 \end{cases}$$

d) Up 3

$$f(x) = \begin{cases} \frac{1}{2}x - 3 & if \ -7 \leq x \leq -2 \\ 4x + 12 & if \ -3 \leq x \leq -2.6 \end{cases}$$

Identify the shift of the following function

$$f(x) = (X - 2)^2 - 4$$

a) Left 2, Down 4

$$f(x) = \begin{cases} x + 2 & if \ -2 \le x \le 8 \\ 4 & if \ -3 \le x \le -2 \end{cases}$$

b) Right 2, Up 4

$$f(x) = \begin{cases} x - 2 & if \ -4 \le x \le 8 \\ -4 & if \ -3 \le x \le 2 \end{cases}$$

c) Right 2, Down 4

$$f(x) = \begin{cases} x - 2 & if \ -2 \le x \le 8 \\ -4 & if \ -3 \le x \le -2 \end{cases}$$

d) Left 4, Down 2

$$f(x) = \begin{cases} x - 2 & if \ \ 2 \le x \le 8 \\ -4x & if \ -3 \le x \le -2 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x + 2| + 7$$

a) Left 7, Up 2

$$f(x) = \begin{cases} 3x - 14 \ \ if \ \ -7 \leq x \leq -3 \\ 3x - 2 \ \ if \ \ -4 \leq x \leq 2.8 \end{cases}$$

b) Right 2, Up 7

$$f(x) = \begin{cases} 3x + 4 \ \ if \ \ -9 \leq x \leq -2 \\ -\frac{3}{8}x + 2 \ \ if \ \ -2 \leq x \leq -0.8 \end{cases}$$

c) Right 7, Up 2

$$f(x) = \begin{cases} 3x + 7 \ \ if \ \ -7 \leq x \leq -5 \\ 8x - 12 \ \ if \ \ -4 \leq x \leq -2.8 \end{cases}$$

d) Left 2, Up 7

$$f(x) = \begin{cases} 3x + 14 \ \ if \ \ -7 \leq x \leq -5 \\ \frac{3}{8}x - 2 \ \ if \ \ -4 \leq x \leq -2.8 \end{cases}$$

Identify the shift of the following function

$$f(x) = x^2 - 9$$

a) Left 9

$$f(x) = \begin{cases} 2x + 15.5 & if \ -5 \le x \le -3.8 \\ 9x + 94 & if \ -7.4 \le x \le -7 \end{cases}$$

b) Down 9

$$f(x) = \begin{cases} \frac{9}{2}x + 15.5 & if \ -4 \le x \le -3.8 \\ 19x + 94 & if \ -5.1 \le x \le -5 \end{cases}$$

c) Right 9

$$f(x) = \begin{cases} 9x + 15.5 & if \ -5 \le x \le -2 \\ x + 4 & if \ -6.1 \le x \le -5 \end{cases}$$

d) Up 9

$$f(x) = \begin{cases} \frac{9}{2}x - 5.5 & if \ -4 \le x \le -2 \\ 19x - 94 & if \ -7.1 \le x \le -6 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x+3} - 8$$

a) Left 3, Up 8

$$f(x) = \begin{cases} 11x & if \ -6 \le x \le -4 \\ \frac{x^2}{3} + x + 4 & if \ 5 \le x \le 7 \end{cases}$$

b) Right 3, Down 8

$$f(x) = \begin{cases} 6x & if \ -5 \le x \le -3.8 \\ 2x - 4 & if \ 3 \le x \le 6 \end{cases}$$

c) Left 3, Down 8

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -5 \le x \le -3.8 \\ -\frac{x^2}{3} + 2x + 4 & if \ 3 \le x \le 6 \end{cases}$$

d) Left 8, Up 3

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -7 \le x \le -3.8 \\ -x^2 - 4 & if \ 3 \le x \le 6 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x - 7| + 2$$

a) Left 7, Up 2

$$f(x) = \begin{cases} \frac{x^2}{3} - \frac{8x}{3} - \frac{8}{3} & if \ \ 4 \leq x \leq 7 \end{cases}$$

b) Right 2, Down 7

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{x}{3} - \frac{8}{3} & if \ \ 7 \leq x \leq 9 \end{cases}$$

c) Right 7, Down 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ -4 \leq x \leq -7 \end{cases}$$

d) Right 7, Up 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ 4 \leq x \leq 7 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x-4} - 1$$

a) Right 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ \ 5 \leq x \leq 8 \end{cases}$$

b) Left 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ \ -8 \leq x \leq -5 \end{cases}$$

c) Left 1, Up 4

$$f(x) = \begin{cases} \frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ \ 6 \leq x \leq 8 \end{cases}$$

d) Right 1, Down 4

$$f(x) = \begin{cases} -\frac{x^2}{3} - \frac{10x}{3} - \frac{2}{3} & if \ \ 3 \leq x \leq 6 \end{cases}$$

Name: _____ Date: _____ Period: ____

Graph Transformations Graph Activity

Directions: Start at any station and identify how the functions shifts from the parent function. Then graph the corresponding piecewise function on your calculator. You can move through the stations in any order. When you are done, a fun picture will be revealed. Change the colors of the lines to make your picture unique.

Mystery Picture: _____

Black and White Version

Identify the shift of the following function

$$f(x) = \sqrt{x-6}$$

a) Left 6

$$f(x) = \begin{cases} x-4 & if \ -5 \le x \le 6 \\ (x+6)^2 - 4 & if \ -6 \le x \le 4.8 \end{cases}$$

b) Up 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x-6)^2 - 4 & if \ -6 \le x \le 7 \end{cases}$$

c) Right 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x+6)^2 - 4 & if \ -6 \le x \le -4.8 \end{cases}$$

d) Down 6

$$f(x) = \begin{cases} x-4 & if \ -4 \le x \le 8 \\ -(x+6)^2 + 4 & if \ -6 \le x \le -4.8 \end{cases}$$

Identify the shift of the following function

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

a) Down 3

$$f(x) = \begin{cases} 2x - 3 & if \ -7 \le x \le 2 \\ 4x + 12 & if \ -3 \le x \le -4 \end{cases}$$

b) Right 3

$$f(x) = \begin{cases} \frac{1}{2}x + 3 & if \ -3 \le x \le -2 \\ 4x - 12 & if \ -2 \le x \le -2.6 \end{cases}$$

c) Left 3

$$f(x) = \begin{cases} 2x + 3 & if \ -7 \le x \le -2 \\ -4x - 12 & if \ -2 \le x \le -0.6 \end{cases}$$

d) Up 3

$$f(x) = \begin{cases} \frac{1}{2}x - 3 & if \ -7 \le x \le -2 \\ 4x + 12 & if \ -3 \le x \le -2.6 \end{cases}$$

Identify the shift of the following function

$$f(x) = (X - 2)^2 - 4$$

a) Left 2, Down 4

$$f(x) = \begin{cases} x + 2 & if \ -2 \le x \le 8 \\ 4 & if \ -3 \le x \le -2 \end{cases}$$

b) Right 2, Up 4

$$f(x) = \begin{cases} x - 2 & if \ -4 \le x \le 8 \\ -4 & if \ -3 \le x \le 2 \end{cases}$$

c) Right 2, Down 4

$$f(x) = \begin{cases} x - 2 & if \ -2 \le x \le 8 \\ -4 & if \ -3 \le x \le -2 \end{cases}$$

d) Left 4, Down 2

$$f(x) = \begin{cases} x - 2 & if \ \ 2 \le x \le 8 \\ -4x & if \ -3 \le x \le -2 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x + 2| + 7$$

a) Left 7, Up 2

$$f(x) = \begin{cases} 3x - 14 \ \ if \ \ -7 \le x \le -3 \\ 3x - 2 \ \ if \ \ -4 \le x \le 2.8 \end{cases}$$

b) Right 2, Up 7

$$f(x) = \begin{cases} 3x + 4 \ \ if \ \ -9 \le x \le -2 \\ -\frac{3}{8}x + 2 \ \ if \ \ -2 \le x \le -0.8 \end{cases}$$

c) Right 7, Up 2

$$f(x) = \begin{cases} 3x + 7 & if \ \ -7 \le x \le -5 \\ 8x - 12 & if \ \ -4 \le x \le -2.8 \end{cases}$$

d) Left 2, Up 7

$$f(x) = \begin{cases} 3x + 14 \ \ if \ \ -7 \le x \le -5 \\ \frac{3}{8}x - 2 \ \ if \ \ -4 \le x \le -2.8 \end{cases}$$

Identify the shift of the following function

$$f(x) = x^2 - 9$$

a) Left 9

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$$f(x) = \begin{cases} \frac{9}{2}x + 15.5 & if \ -4 \le x \le -3.8 \\ 19x + 94 & if \ -5.1 \le x \le -5 \end{cases}$$

c) Right 9

$$f(x) = \begin{cases} 9x + 15.5 & if \ -5 \le x \le -2 \\ x + 4 & if \ -6.1 \le x \le -5 \end{cases}$$

d) Up 9

$$f(x) = \begin{cases} \frac{9}{2}x - 5.5 & if \ -4 \le x \le -2 \\ 19x - 94 & if \ -7.1 \le x \le -6 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x+3} - 8$$

a) Left 3, Up 8

$$f(x) = \begin{cases} 11x & if \ -6 \le x \le -4 \\ \frac{x^2}{3} + x + 4 & if \ 5 \le x \le 7 \end{cases}$$

b) Right 3, Down 8

$$f(x) = \begin{cases} 6x & if \ -5 \le x \le -3.8 \\ 2x - 4 & if \ 3 \le x \le 6 \end{cases}$$

c) Left 3, Down 8

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -5 \le x \le -3.8 \\ -\frac{x^2}{3} + 2x + 4 & if \ 3 \le x \le 6 \end{cases}$$

d) Left 8, Up 3

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -7 \le x \le -3.8 \\ -x^2 - 4 & if \ 3 \le x \le 6 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x - 7| + 2$$

a) Left 7, Up 2

$$f(x) = \begin{cases} \frac{x^2}{3} - \frac{8x}{3} - \frac{8}{3} & if \ \ 4 \leq x \leq 7 \end{cases}$$

b) Right 2, Down 7

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{x}{3} - \frac{8}{3} & if \ \ 7 \leq x \leq 9 \end{cases}$$

c) Right 7, Down 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ -4 \leq x \leq -7 \end{cases}$$

d) Right 7, Up 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ 4 \leq x \leq 7 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x-4} - 1$$

a) Right 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ 5 \le x \le 8 \end{cases}$$

b) Left 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ -8 \le x \le -5 \end{cases}$$

c) Left 1, Up 4

$$f(x) = \begin{cases} \frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ 6 \le x \le 8 \end{cases}$$

d) Right 1, Down 4

$$f(x) = \begin{cases} -\frac{x^2}{3} - \frac{10x}{3} - \frac{2}{3} & if \ 3 \le x \le 6 \end{cases}$$

Name: _____ Date: _____ Period: ____

Graph Transformations Graph Activity

Directions: Start at any station and identify how the functions shifts from the parent function. Then graph the corresponding piecewise function on your calculator. You can move through the stations in any order. When you are done, a fun picture will be revealed. Change the colors of the lines to make your picture unique.

Mystery Picture: _____

Colored Version

Identify the shift of the following function

$$f(x) = \sqrt{x-6}$$

a) Left 6

$$f(x) = \begin{cases} x-4 & if \ -5 \le x \le 6 \\ (x+6)^2 - 4 & if \ -6 \le x \le 4.8 \end{cases}$$

b) Up 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x-6)^2 - 4 & if \ -6 \le x \le 7 \end{cases}$$

c) Right 6

$$f(x) = \begin{cases} x+4 & if \ -5 \le x \le 5 \\ -(x+6)^2 - 4 & if \ -6 \le x \le -4.8 \end{cases}$$

d) Down 6

$$f(x) = \begin{cases} x-4 & if \ -4 \le x \le 8 \\ -(x+6)^2 + 4 & if \ -6 \le x \le -4.8 \end{cases}$$

Identify the shift of the following function

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

a) Down 3

$$f(x) = \begin{cases} 2x - 3 & if \ -7 \le x \le 2 \\ 4x + 12 & if \ -3 \le x \le -4 \end{cases}$$

b) Right 3

$$f(x) = \begin{cases} \frac{1}{2}x + 3 & if \ -3 \le x \le -2 \\ 4x - 12 & if \ -2 \le x \le -2.6 \end{cases}$$

c) Left 3

$$f(x) = \begin{cases} 2x + 3 & if \ -7 \le x \le -2 \\ -4x - 12 & if \ -2 \le x \le -0.6 \end{cases}$$

d) Up 3

$$f(x) = \begin{cases} \frac{1}{2}x - 3 & if \ -7 \le x \le -2 \\ 4x + 12 & if \ -3 \le x \le -2.6 \end{cases}$$

Identify the shift of the following function

$$f(x) = (X - 2)^2 - 4$$

a) Left 2, Down 4

$$f(x) = \begin{cases} x + 2 & if \ -2 \le x \le 8 \\ 4 & if \ -3 \le x \le -2 \end{cases}$$

b) Right 2, Up 4

$$f(x) = \begin{cases} x - 2 & if \ -4 \le x \le 8 \\ -4 & if \ -3 \le x \le 2 \end{cases}$$

c) Right 2, Down 4

$$f(x) = \begin{cases} x - 2 & if \ -2 \le x \le 8 \\ -4 & if \ -3 \le x \le -2 \end{cases}$$

d) Left 4, Down 2

$$f(x) = \begin{cases} x - 2 & if \ \ 2 \le x \le 8 \\ -4x & if \ -3 \le x \le -2 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x + 2| + 7$$

a) Left 7, Up 2

$$f(x) = \begin{cases} 3x - 14 \ \ if \ \ -7 \leq x \leq -3 \\ 3x - 2 \ \ if \ \ -4 \leq x \leq 2.8 \end{cases}$$

b) Right 2, Up 7

$$f(x) = \begin{cases} 3x + 4 \ \ if \ \ -9 \leq x \leq -2 \\ -\frac{3}{8}x + 2 \ \ if \ \ -2 \leq x \leq -0.8 \end{cases}$$

c) Right 7, Up 2

$$f(x) = \begin{cases} 3x + 7 \ \ if \ \ -7 \leq x \leq -5 \\ 8x - 12 \ \ if \ \ -4 \leq x \leq -2.8 \end{cases}$$

d) Left 2, Up 7

$$f(x) = \begin{cases} 3x + 14 \ \ if \ \ -7 \leq x \leq -5 \\ \frac{3}{8}x - 2 \ \ if \ \ -4 \leq x \leq -2.8 \end{cases}$$

Identify the shift of the following function

$$f(x) = x^2 - 9$$

a) Left 9

$$f(x) = \begin{cases} 2x + 15.5 & if \ -5 \le x \le -3.8 \\ 9x + 94 & if \ -7.4 \le x \le -7 \end{cases}$$

b) Down 9

$$f(x) = \begin{cases} \frac{9}{2}x + 15.5 & if \ -4 \le x \le -3.8 \\ 19x + 94 & if \ -5.1 \le x \le -5 \end{cases}$$

c) Right 9

$$f(x) = \begin{cases} 9x + 15.5 & if \ -5 \le x \le -2 \\ x + 4 & if \ -6.1 \le x \le -5 \end{cases}$$

d) Up 9

$$f(x) = \begin{cases} \frac{9}{2}x - 5.5 & if \ -4 \le x \le -2 \\ 19x - 94 & if \ -7.1 \le x \le -6 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x+3} - 8$$

a) Left 3, Up 8

$$f(x) = \begin{cases} 11x & if \ -6 \le x \le -4 \\ \frac{x^2}{3} + x + 4 & if \ 5 \le x \le 7 \end{cases}$$

b) Right 3, Down 8

$$f(x) = \begin{cases} 6x & if \ -5 \le x \le -3.8 \\ 2x - 4 & if \ 3 \le x \le 6 \end{cases}$$

c) Left 3, Down 8

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -5 \le x \le -3.8 \\ -\frac{x^2}{3} + 2x + 4 & if \ 3 \le x \le 6 \end{cases}$$

d) Left 8, Up 3

$$f(x) = \begin{cases} \frac{6}{11}x & if \ -7 \le x \le -3.8 \\ -x^2 - 4 & if \ 3 \le x \le 6 \end{cases}$$

Identify the shift of the following function

$$f(x) = |x - 7| + 2$$

a) Left 7, Up 2

$$f(x) = \begin{cases} \frac{x^2}{3} - \frac{8x}{3} - \frac{8}{3} & if \ \ 4 \le x \le 7 \end{cases}$$

b) Right 2, Down 7

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{x}{3} - \frac{8}{3} & if \ \ 7 \le x \le 9 \end{cases}$$

c) Right 7, Down 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ -4 \le x \le -7 \end{cases}$$

d) Right 7, Up 2

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{8x}{3} + \frac{8}{3} & if \ \ 4 \le x \le 7 \end{cases}$$

Identify the shift of the following function

$$f(x) = \sqrt{x-4} - 1$$

a) Right 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ 5 \le x \le 8 \end{cases}$$

b) Left 4, Down 1

$$f(x) = \begin{cases} -\frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ -8 \le x \le -5 \end{cases}$$

c) Left 1, Up 4

$$f(x) = \begin{cases} \frac{x^2}{3} + \frac{10x}{3} + \frac{2}{3} & if \ 6 \le x \le 8 \end{cases}$$

d) Right 1, Down 4

$$f(x) = \begin{cases} -\frac{x^2}{3} - \frac{10x}{3} - \frac{2}{3} & if \ 3 \le x \le 6 \end{cases}$$

Name: _____ Date: _____ Period: ____

Graph Transformations Graph Activity

Directions: Start at any station and identify how the functions shifts from the parent function. Then graph the corresponding piecewise function on your calculator. You can move through the stations in any order. When you are done, a fun picture will be revealed. Change the colors of the lines to make your picture unique.

Mystery Picture: _____