

#91a

Algebra 1 BB3 Intro

Name _____ Pd _____

Given $m(x + a)^2 + b$

$y = x^2$ is shown \rightarrow

b moves the graph up or down

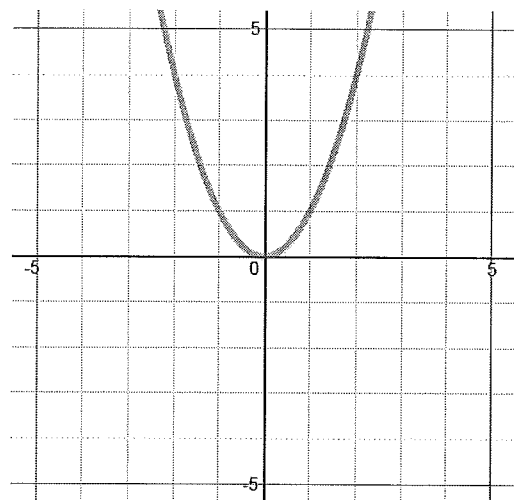
- adding moves it up
- subtracting moves it down

a moves the graph left or right

- adding moves it left
- subtracting moves it right

m squeezes/stretches the graph and can

flip the graph upside down if it is negative.



Find $g(x)$, where $g(x)$ is the translation 10 units up of $f(x) = x^2$.

Write your answer in the form $m(x + a)^2 + b$, where m , a , and b are integers.

$g(x) =$

Find $g(x)$, where $g(x)$ is the translation 9 units up of $f(x) = x^2$.

Write your answer in the form $m(x + a)^2 + b$, where m , a , and b are integers.

$g(x) =$

Find $g(x)$, where $g(x)$ is the translation 2 units down of $f(x) = x^2$.

Write your answer in the form $m(x + a)^2 + b$, where m , a , and b are integers.

$g(x) =$

Find $g(x)$, where $g(x)$ is the translation 6 units down of $f(x) = -(x - 1)^2 - 4$.

Write your answer in the form $m(x + a)^2 + b$, where m , a , and b are integers.

$g(x) =$

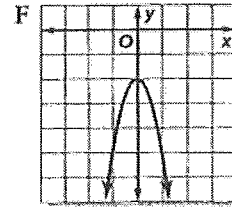
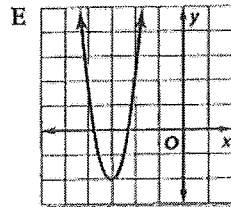
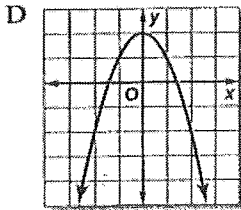
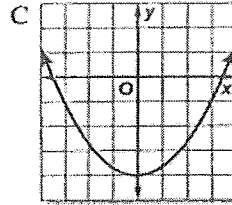
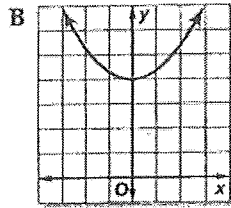
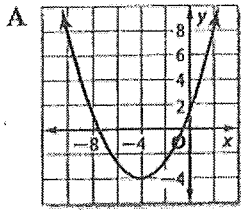
Find $g(x)$, where $g(x)$ is the translation 1 unit up of $f(x) = -5(x + 8)^2 - 2$.

Write your answer in the form $m(x + a)^2 + b$, where m , a , and b are integers.

$g(x) =$

9/b

Match each equation to its graph.



18. $y = \frac{1}{3}x^2 - 4$

19. $y = \frac{1}{3}(x + 4)^2 - 4$

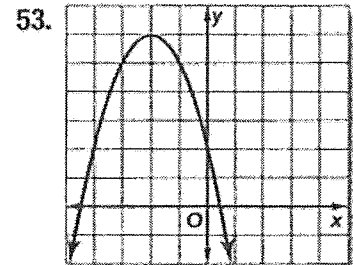
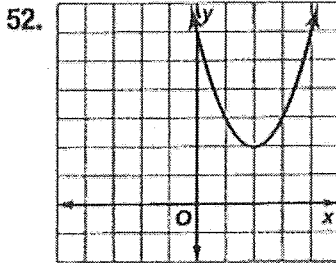
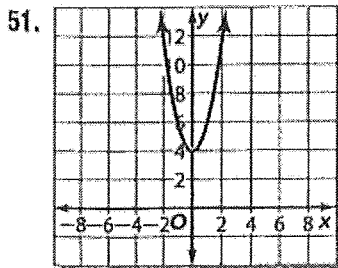
20. $y = \frac{1}{3}x^2 + 4$

21. $y = -3x^2 - 2$

22. $y = -x^2 + 2$

23. $y = (2x + 6)^2 + 2$

Find the vertex, the equation of the axis of symmetry, and the y -intercept of each graph. (Lesson 9-1)

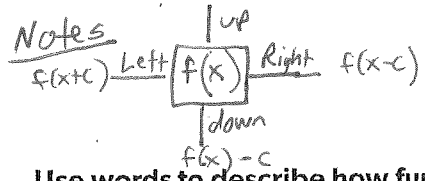


54. **CLASS TRIP** Mr. Wong's American History class will take taxis from their hotel in Washington, D.C., to the Lincoln Memorial. The fare is \$2.75 for the first mile and \$1.25 for each additional mile. If the distance is m miles and t taxis are needed, write an expression for the cost to transport the group. (Lesson 8-2)

Solve each inequality. Check your solution. (Lesson 5-3)

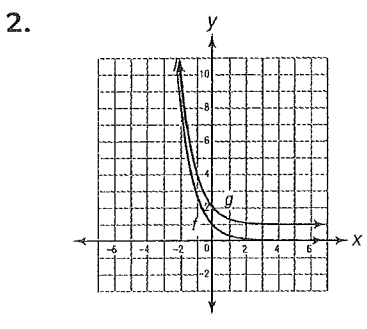
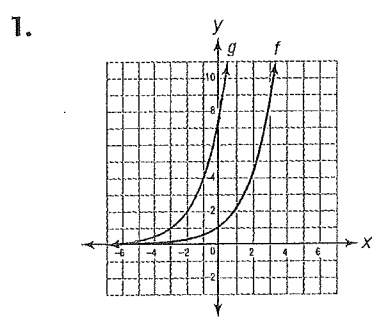
55. $-3t + 6 \leq -3$

56. $59 > -5 - 8f$



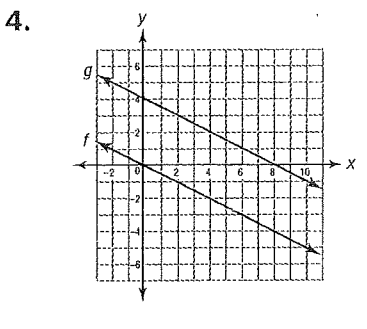
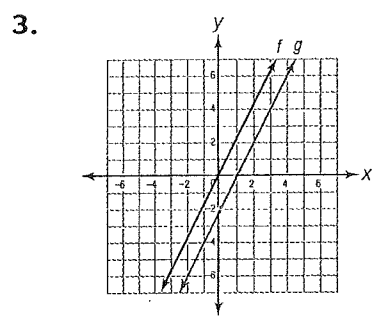
Practice

Use words to describe how function f could be translated to form function g in one step.



HINT How can $(0, 1)$ be translated to cover $(0, 2)$?

Use words to describe a horizontal translation that would transform function f into function g . Then describe a vertical translation that would transform function f into function g .



horizontal translation: _____

horizontal translation: _____

vertical translation: _____

vertical translation: _____

REMEMBER Horizontal means left and right.
Vertical means up and down.

Write true or false for each statement. If false, rewrite the statement to make it true.

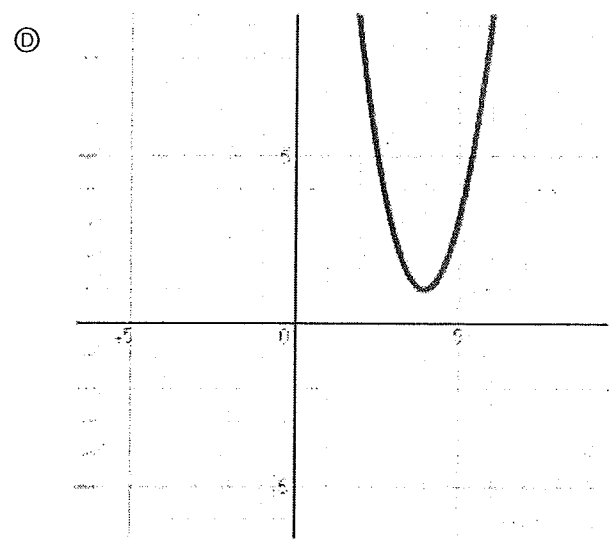
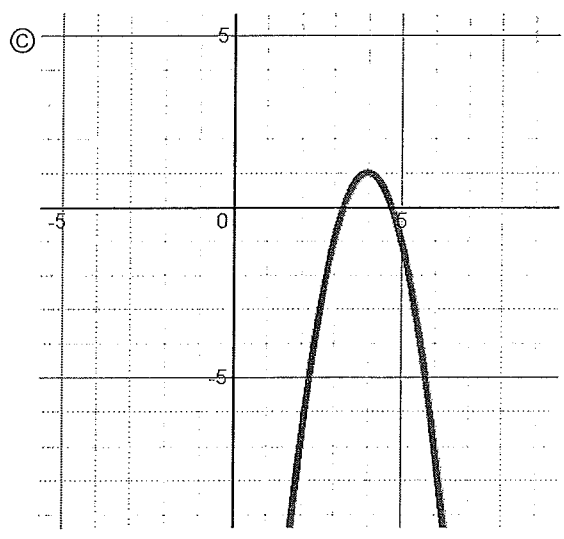
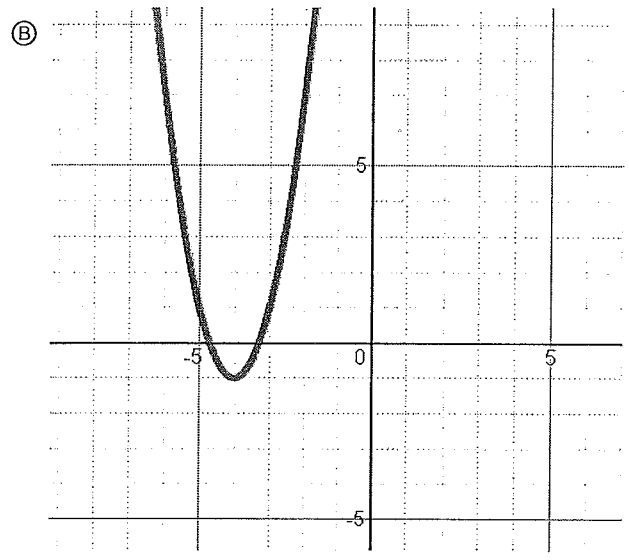
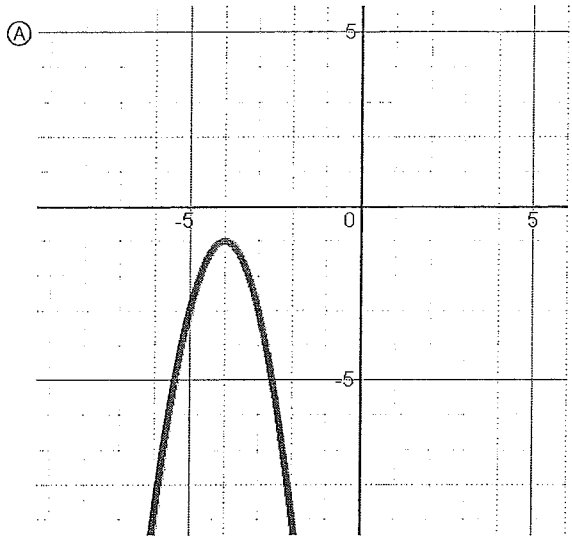
- A translation is a slide of a graph to a new location on the coordinate plane.

- If $g(x) = f(x) - k$, then the graph of f is translated k units down to form the graph of g .

- If $g(x) = f(x - k)$, then the graph of f is translated k units left to form the graph of g .

#93a

9. Which of the following is the graph of $y = -2(x + 4)^2 - 1$?

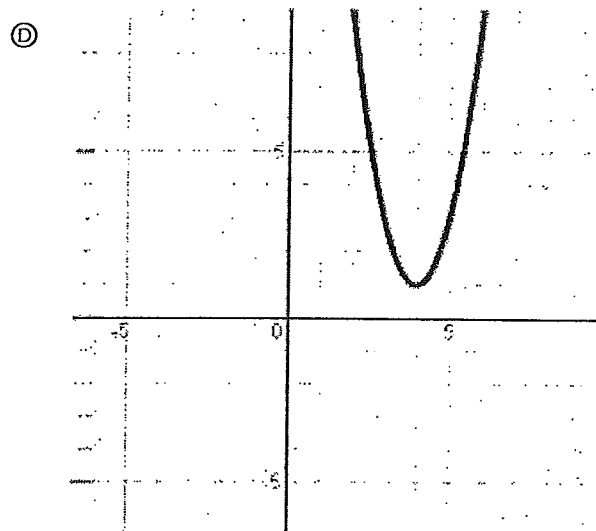
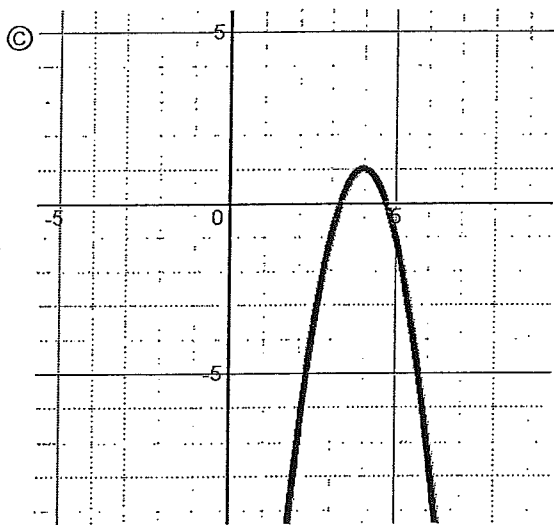
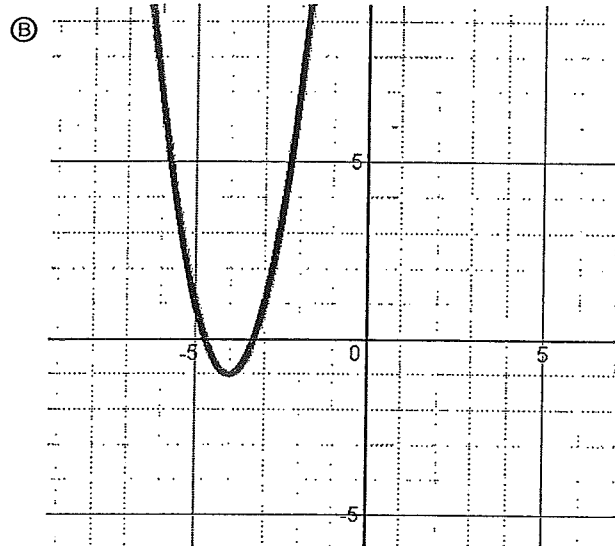
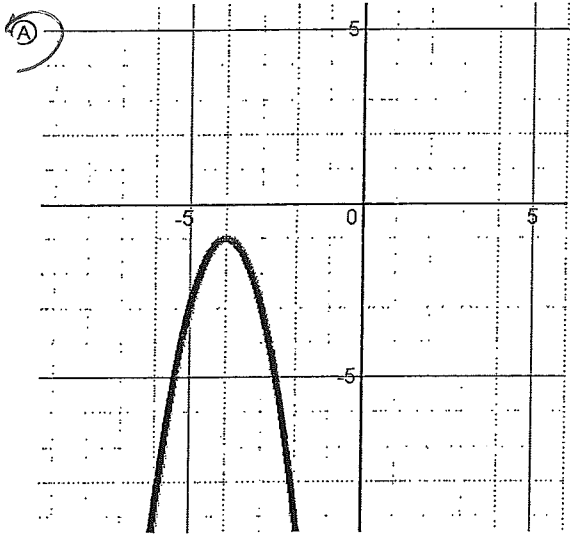


10. The function f is given by $f(x) = x^2 + 3x - 15$.
If $f(x+2) = x^2 + kx - 5$, what is the value of k ?

- (A) 5
- (B) 7
- (C) 8
- (D) 9

(*) Solve for x
 $x(x-2)(x+4)(x+7) = 0$

9. Which of the following is the graph of $y = -2(x + 4)^2 - 1$?



10. The function f is given by $f(x) = x^2 + 3x - 15$

If $f(x+2) = x^2 + kx - 5$, what is the value of k ?

(A) 5

(B) 7

(C) 8

(D) 9

$$\begin{aligned} &(x+2)^2 + 3(x+2) - 15 \\ &x^2 + 4x + 4 + 3x + 6 - 15 \\ &x^2 + 7x - 5 \\ &\quad \underline{\quad} \\ &\quad k \end{aligned}$$

3

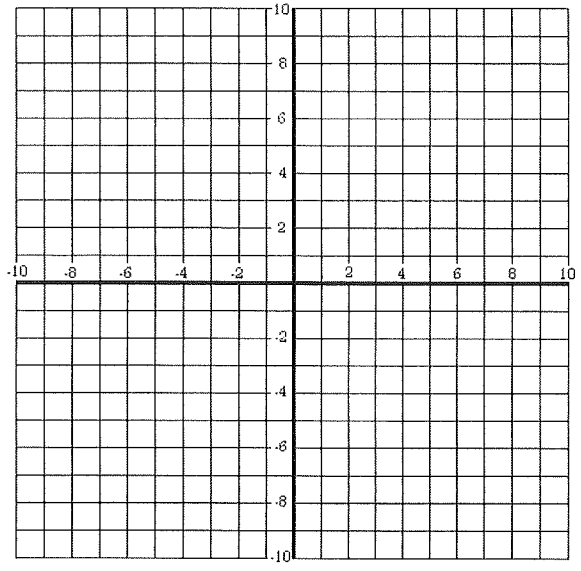
94a

Algebra 1 AIR Questions for CH 9

1 – Consider the two functions

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

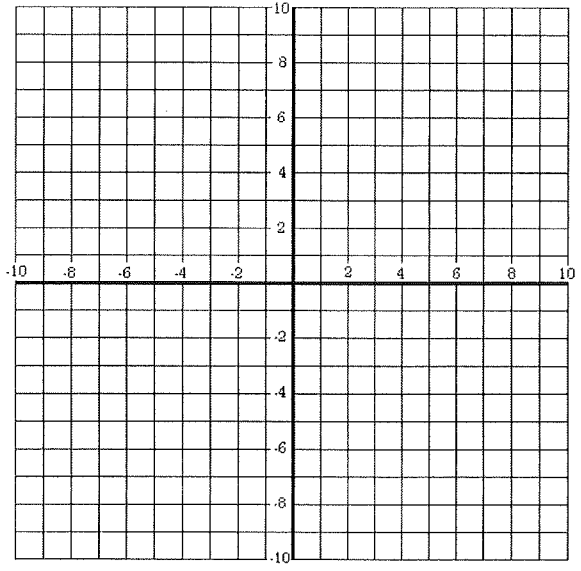
- a. Graph both functions
- b. Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$



2 – Consider the two functions

$$f(x) = x^2 + x + 1$$
$$g(x) = x^2 + x - 3$$

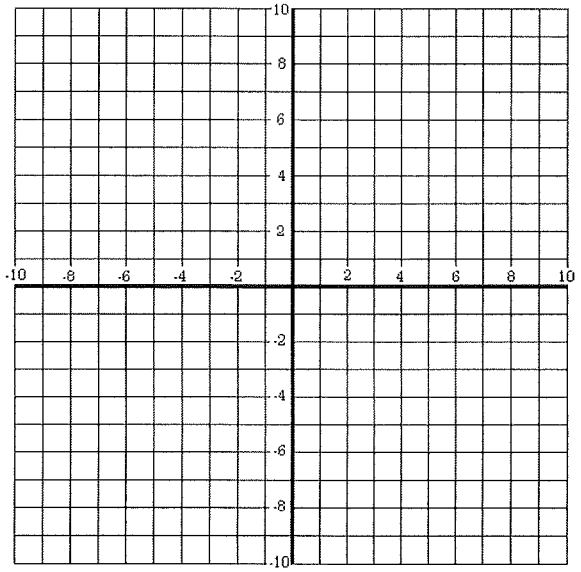
- a. Graph both functions
- b. Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$



3 – Consider the two functions

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

- a. Graph both functions
- b. Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$



94b

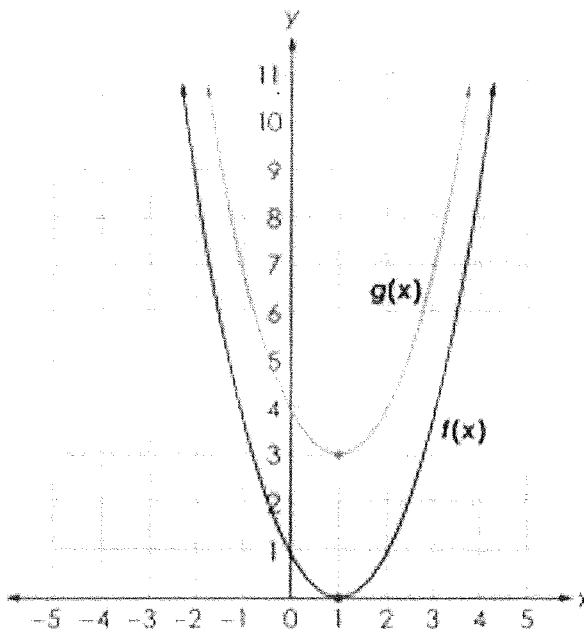
Released Algebra 1 Questions, 2016
Chapter 9

A grasshopper jumps off of a tree stump. The height, in feet, of the grasshopper above the ground after t seconds is modeled by the function shown.

$$h(t) = -t^2 + \frac{4}{3}t + \frac{1}{4}$$

After how many seconds will the grasshopper land on the ground?

Function $f(x)$ undergoes a single transformation to create function $g(x)$. The graphs of both $f(x)$ and $g(x)$ are shown.



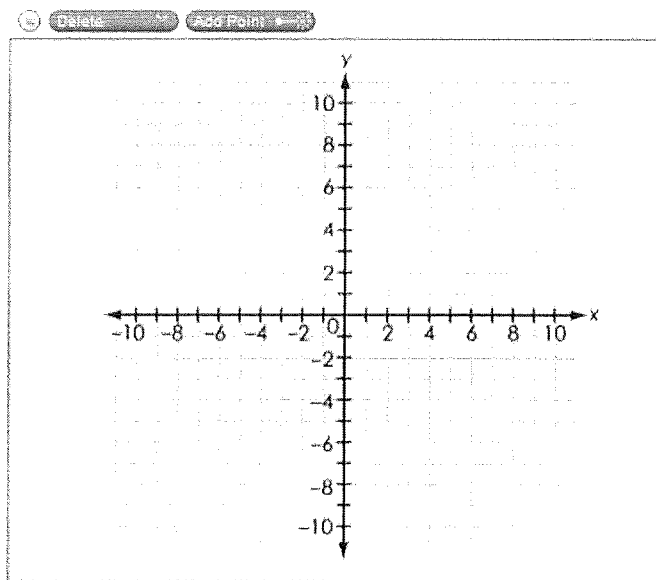
Create $g(x)$ in terms of $f(x)$.

$g(x) =$

A function is shown.

$$f(x) = x^2 + 2x - 3$$

Use the Add Point tool to show the x -intercepts and maximum or minimum of the function.



94c

The graph of a quadratic function $f(x)$ intersects the x -axis at -3 and 5 .

What is a possible equation for $f(x)$?

$f(x) =$

A function is shown.

$$f(x) = 5(x - 2)^2 + 3$$

What is the minimum value of the function?

An equation of a function $y(t)$ is shown.

$$y(t) = -t^2 + 14t - 40$$

Select all of the statements that are true about the graph of $y(t)$ for $6 \leq t \leq 8$.

- The value of $y(t)$ increases over the interval $6 \leq t \leq 7$.
- The value of $y(t)$ increases over the interval $7 \leq t \leq 8$.
- The average rate of change over the interval $6 \leq t \leq 8$ is 0.
- The value of $y(t)$ is constant over the interval $6 \leq t \leq 8$.
- The average rate of change over the interval $6 \leq t \leq 7$ is the same as the average rate of change over the interval $7 \leq t \leq 8$.

Algebra 1 AIR Questions for CH 9

Key

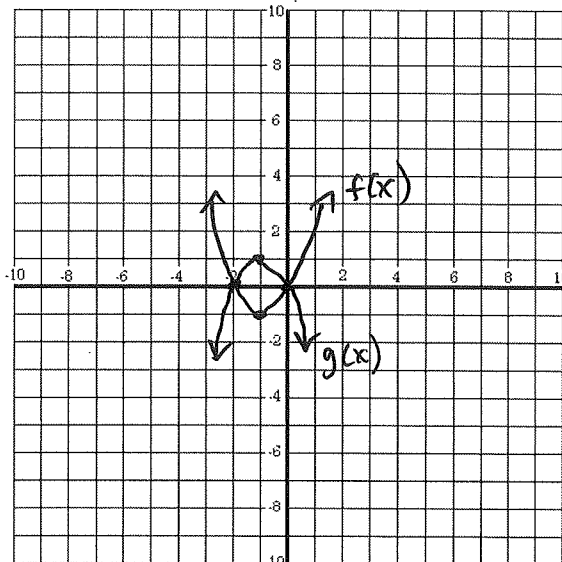
1 – Consider the two functions

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

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

- Graph both functions
- Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$

reflect / flip $f(x)$ over the x-axis to create $g(x)$



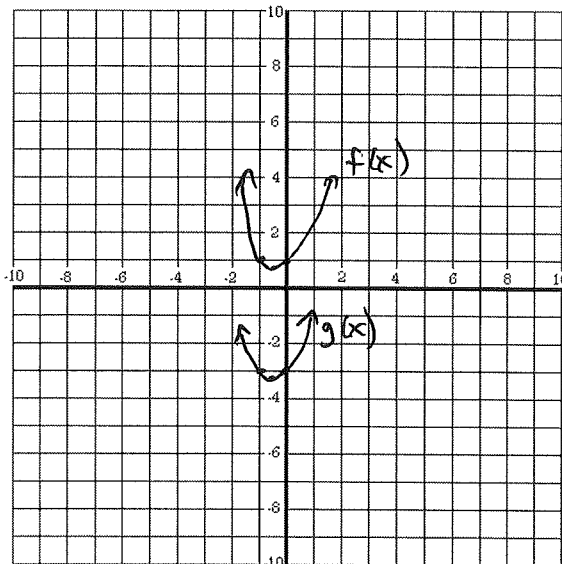
2 – Consider the two functions

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

$$g(x) = x^2 + x - 3$$

- Graph both functions
- Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$

shift $f(x)$ down 4 to create $g(x)$



3 – Consider the two functions

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

$$g(x) = (x + 4)(x + 2)$$

- Graph both functions
- Describe how the graph of $f(x)$ can be transformed to become the graph of $g(x)$

shift $f(x)$ left 4 units to create $g(x)$

