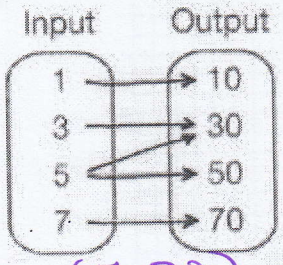
Coordinate Algebra
MILESTONE REVIEW—Coach Book

NAME: Key

Unit 3 Review

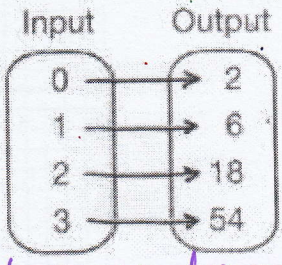
Determine whether each relation is a function.

1.



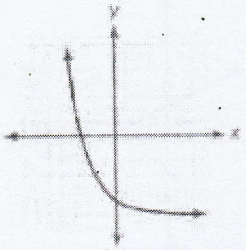
NO (5,30) (5,50) x repeats

2.



Yes, x doesn't repeats

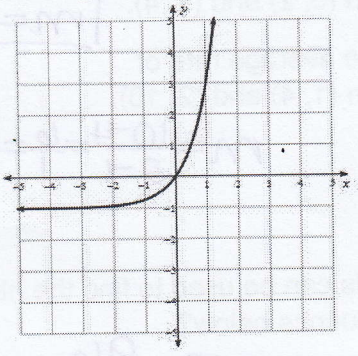
3.



Yes; passes Vertical Line Test

For each graph, determine the graph is increasing or decreasing and its end behavior.

4.

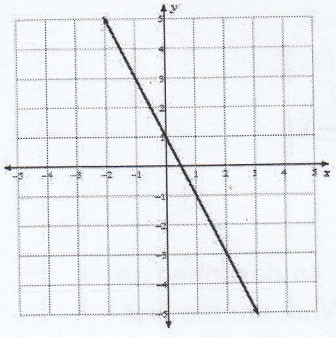


The graph is always increasing.

The graph approaches on the left.

The graph rises on the right.

5.



The graph is always decreasing

The graph rises on the left.

The graph falls on the right.

6. Identify the x and y intercepts.

x	-24	-12	0	12	24
$f(x)$	-8	-6	-4	-2	0

x - intercept: 24

y – intercept: −4

7. The highest possible grade for a report is 100. Each day the report is late, the teacher deducts 10 points.

+1 +1 +1 +1

Days Late, x	0	1	2	3	4
Starting Grade, $g(x)$	100	90	80	70	60

−10 −10 −10 −10

$m = \frac{-10}{1}$

$m = -10$

$b = 100$

Could the situation be modeled by a linear or exponential function? Linear

Write a function that could be used to model the relationship.

$y = -10x + 100$

8. The equation $A(t) = 900(0.85)^t$ represents the value of a motor scooter t years after it was purchased. Which statement is also true of this situation?

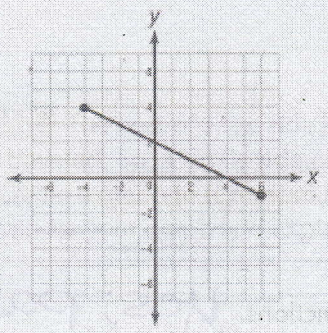
a) When new, the scooter cost $765.

b) When new, the scooter cost $900.

c) The scooter's value is decreasing at a rate of 85% each year.

d) The scooter's value is decreasing at a rate of 0.015% each year.

9. Which statement about this function is **not** true?



A. Its domain is $\{-4 \le x \le 6\}$.

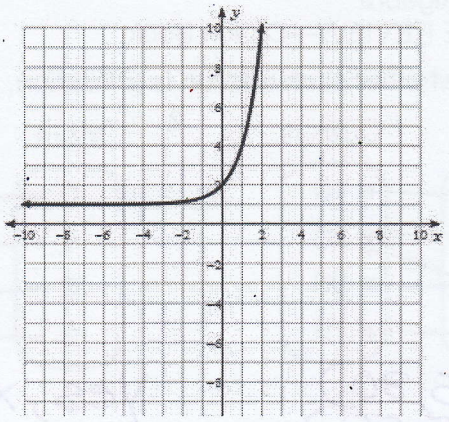
B. Its range is $\{-1 \le y \le 4\}$.

C. It has a y-intercept at (0, 2).

D. It has a maximum of 6.

max = 4

10.



a) Determine the average rate of change between (0, 2) and (1, 4).

$m = \frac{4-2}{1-0}$

$m = 2$

b) Determine the average rate of change between (1, 4) and (2, 10).

$m = \frac{10-4}{2-1} = \frac{6}{1} = 6$

11. The formula $a_n = 10 - 4n$ describes an arithmetic sequence. What are the first four terms of the sequence?

a) 6, 2, -2, -6

b) 6, 2, 0, -2

c) 10, 6, 2, -2

d) 14, 18, 22, 26

$a_1 = 10 - 4(1)$

$a_1 = 10 - 4 = 6$

$a_2 = 10 - 4(2)$

$a_2 = 10 - 8 = 2$

$a_3 = 10 - 4(3)$

$a_3 = 10 - 12 = -2$

12. Which formula can be used to find the *n*th term in a sequence below?

128, 96, 72, 54, ...

$r = \frac{96}{128}$

$r = \frac{3}{4}$

a) $a_n = 128\left(\frac{3}{4}\right)^{n-1}$

b) $a_n = 128\left(\frac{4}{3}\right)^{n-1}$

c) $a_n = 128\left(\frac{3}{4}\right)^{n}$

d) $a_n = 128\left(\frac{4}{3}\right)^{n}$

$a_n = a_1 \cdot r^{n-1}$

$a_n = 128\left(\frac{3}{4}\right)^{n-1}$

13. Given the sequence

-40, -33, -26, -19,....

+7 +7 +7

Which of the following would be the explicit formula to represent the sequence?

a) $a_n = -40 + 7n$

b) $a_n = -33 + 7n$

c) $a_n = -40 - 7n$

d) $a_n = -47 + 7n$

$a_n = -40 + (n-1)7$

$a_n = -40 + 7n - 7$

$a_n = -47 + 7n$

14. Find the 7th term in the sequence -1, 4, -16, 64, ...

a) $a_7 = -16384$

b) $a_7 = 4096$

c) $a_7 = -4096$

d) $a_7 = 16384$

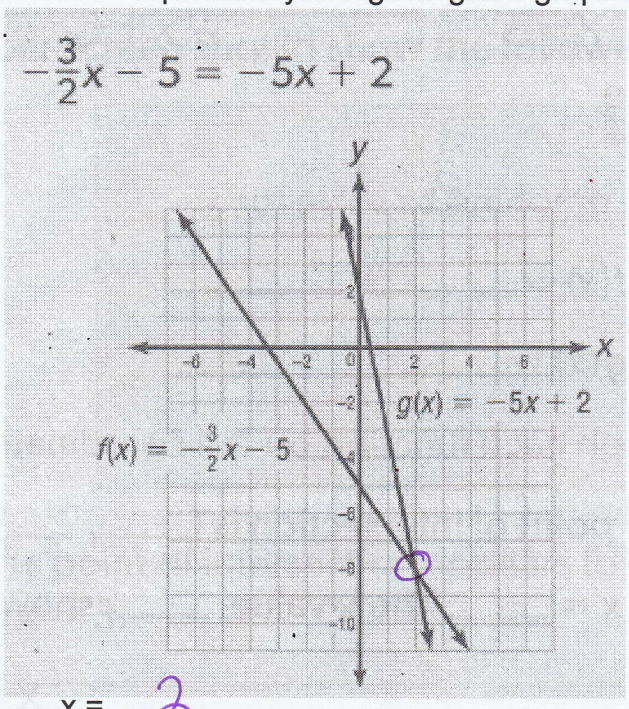
$a_7 = -1(-4)^{7-1}$

$a_7 = -1(-4)^6$

$a_7 = -4096$

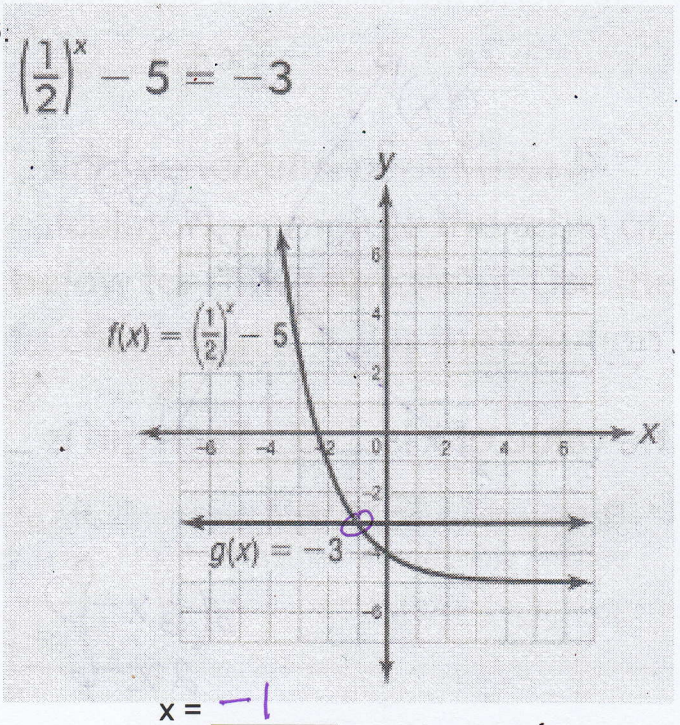
Solve each equation by using the given graph.

15. $-\frac{3}{2}x - 5 = -5x + 2$



x = 2

16. $\left(\frac{1}{2}\right)^x - 5 = -3$



x = −1

17. Solve the equation for x by using the given table.

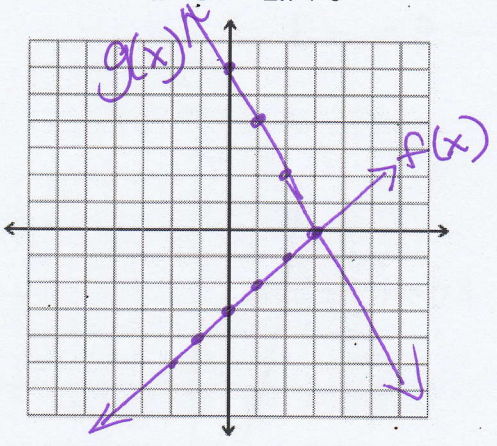
$\frac{1}{2}x + 1 = \frac{3}{2}x - \frac{1}{2}$

x	$f(x) = \frac{1}{2}x + 1$	$g(x) = \frac{3}{2}x - \frac{1}{2}$
0	1	$-\frac{1}{2}$
$\frac{1}{2}$	$\frac{5}{4}$	$\frac{1}{4}$
1	$\frac{3}{2}$	1
$\frac{3}{2}$	$\frac{7}{4}$	$\frac{7}{4}$
2	2	$\frac{5}{2}$

x = $\frac{3}{2}$

18. Define two functions and graph them on the coordinate plane to solve for x.

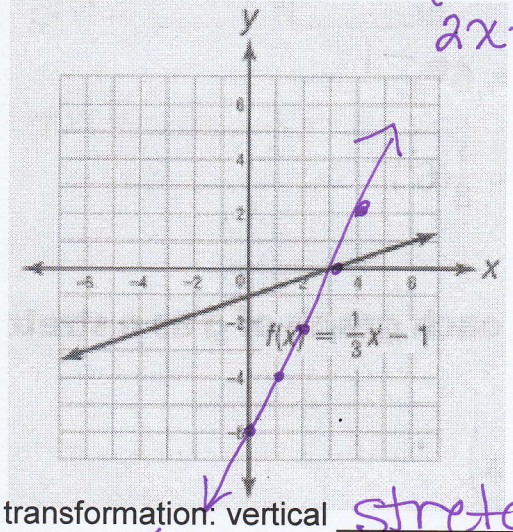
$x-3=-2x+6$ $f(x)=$ x−3 $g(x)=$ −2x+6



x = 3

Graph each function ***g*** on the coordinate plane below it. Classify each graph of ***g*** as either a vertical stretch or a vertical shrink of the graph of ***f***. Then identify the factor.

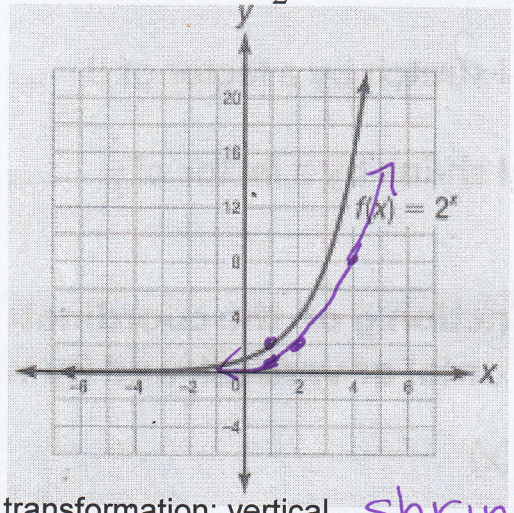
19. $g(x)=2x-6$ $6(\frac{1}{3}x-1)$ $2x-6$



transformation: vertical stretch

factor: 6

20. $g(x)=\frac{1}{2}(2^x)$



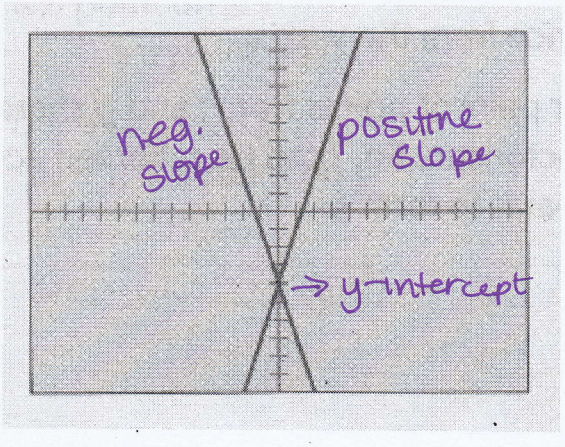
x	y
−2	$\frac{1}{8}$=0.125
−1	$\frac{1}{4}$=0.25
0	$\frac{1}{2}$=0.5
1	1
2	2

transformation: vertical shrink

factor: $\frac{1}{2}$

21. The graphing calculator screen below shows $f(x)=-3x-4$ and its reflection *g*.

Which is **not** true of the functions?



A. $g(x) = f(-x)$

B. Function *f* was reflected across the *y*-axis to form *g*.

C. Both *f* and *g* have the same *y*-intercept.

D. Both *f* and *g* have the same slope.