

ctions

For the given function $f(x) = 2x + 7$, find $f(-2)$.

a. $f(-2) = 11$

b. $f(-2) = 3$

c. $f(-2) = -3$

d. $f(-2) = 18$

For the given function $f(x) = 4x - 6$, which x value would make $f(x) = 30$?

$30 = 4x - 6$

a. $x = 6$

b. $x = 9$

c. $x = 7$

d. $x = 30$

$36 = 4x$
 $x = 9$

In the following table, find the domain when the range is 1.

x	-3	-2	-1	0	1	2	3
f(x)	0	1	2	3	4	5	6

a. 1

b. 0

c. 2

d. 4

Given $f(x) = 8x - 7$ and $g(x) = -2x + 4$, find the following:

a. $f(-2) = 8(-2) - 7$
 -23

b. $g(7) = -2(7) + 4$
 -10

c. $f(x) + g(x) =$
 $(8x - 7) + (-2x + 4)$
 $6x - 3$

d. $f(x) - g(x) =$
 $(8x - 7) - (-2x + 4)$
 $10x - 11$

e. $2 \cdot f(x) =$
 $2(8x - 7)$
 $16x - 14$

f. $f(x) \cdot g(x) =$

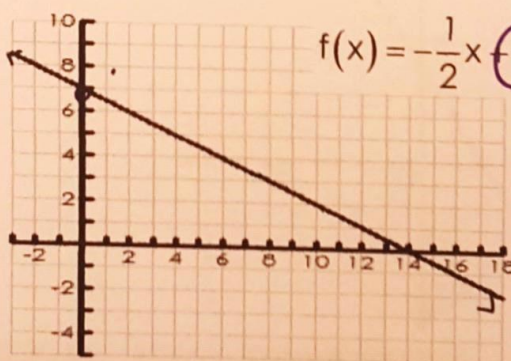
Use the graph and table to answer the following questions.

a) Which function has a greater rate of change?

$g(x)$

b) Which function has a greater initial value?

$f(x)$



x	g(x)
-2	6
-1	4
0	2
1	0
2	-2

6. Kelly - $K(x)$ and Melissa - $M(x)$ are best friends. They both want to become good free throw shooters. They each devise a separate workout plan to get better at shooting free throws. Kelly is going to start with 50 shots and increase by 20 each day. Melissa is going to start with 20 and increase by 25 each day.

Write a function for each person.

- Kelly: $K(x) = 20x + 50$
- Melissa: $M(x) = 25x + 20$

Compare the characteristics with the right:

Characteristic of $K(x)$	<, >, or =	Characteristic of $M(x)$
50 y-intercept of $K(x)$	>	y-intercept of $M(x)$
$K(4) = 130$	>	$M(4) = 120$
Rate of Change of $K(x)$	<	Rate of Change of $M(x)$
20		25

7. Pizza King sells pizza for \$6 per pizza and a \$4 delivery fee.

a. Write a function to model this situation.

$$y = 6x + 4$$

b. Complete the table.

n	m
0	4
1	10
2	16
3	22
4	28

c. How much money do you owe Pizza King for ordering 25 pizzas?

$$6(25) + 4 = \$154$$

Linear Characteristics

8. Determine the key characteristics of the linear function.

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

x-intercept: $(7, 0)$ y-intercept: $(0, 2)$

Increasing or Decreasing? Dec.

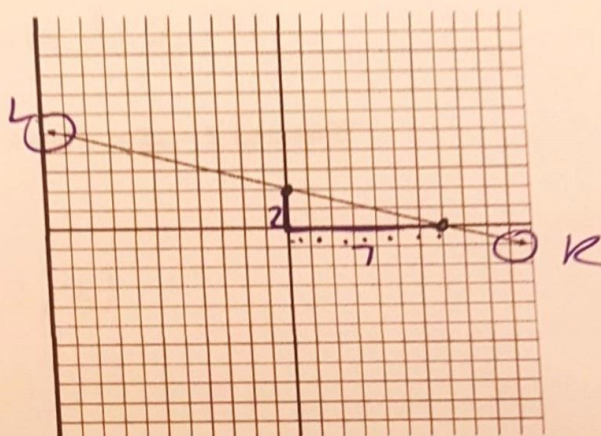
End Behavior:

(left) As $x \rightarrow -\infty, y \rightarrow \infty$

(right) As $x \rightarrow \infty, y \rightarrow -\infty$

Rate of change: $-\frac{2}{7}$

Write the equation of the line at the right. $y = -\frac{2}{7}x + 2$



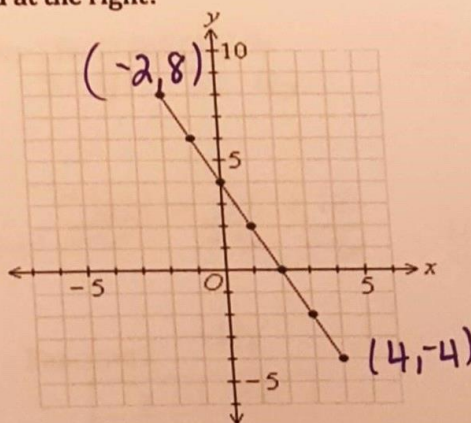
9. What is the domain and range of the function graphed at the right?

Domain: $[-2, 4]$

Range: $[-4, 8]$

x-intercept: $(2, 0)$

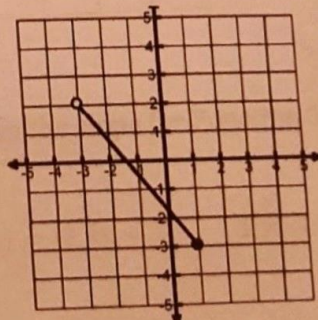
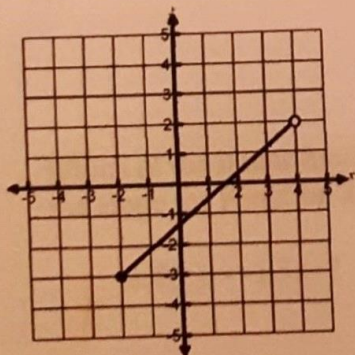
y-intercept: $(0, 4)$



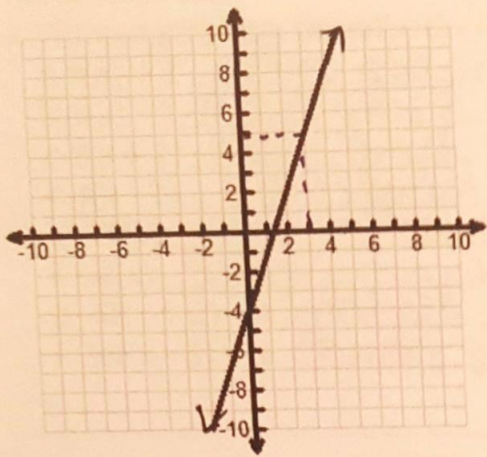
10. Given the graphs below, Write the domain and range in interval notation.

a. Domain: $[-2, 4)$ Range: $[-3, 2)$

b. Domain: $(-3, 1]$ Range: $[-3, 2)$



Use the graph below to answer questions 11 - 13:



11. What is x when $f(x) = 5$? $x = 3$

12. What is the domain of the function? $(-\infty, \infty)$

13. What is the end-behavior, as $x \rightarrow \infty$ (Right hand behavior) of the function modeled? ∞

14. Write in interval notation that represent the situation:

a. All real numbers greater than 2 and less than or equal to 20. $(2, 20]$

b. All real numbers greater than or equal to -6 and less than 14. $[-6, 14)$

15. Based on the tables, at what point do the lines $y = -x + 5$ and $y = 2x - 1$ intersect?

$y = -x + 5$		$y = 2x - 1$	
x	y	x	y
-1	6	-1	-3
0	5	0	-1
1	4	1	1
2	3	2	3
3	2	3	5

$(2, 3)$

Rate of Change: $m = \frac{y_2 - y_1}{x_2 - x_1}$

16. Find the rate of change of the following ordered pairs: (10, 1) and (15, -9).

$x_1 \ y_1 \ x_2 \ y_2$

$\frac{-9 - 1}{15 - 10} = -2$

17. Find the slope of the function: $3x - 6y = 12$

$\frac{-6y}{-6} = \frac{-3x + 12}{-6}$

$y = \frac{1}{2}x - 2$

18. The tables below model two linear functions.

Function 1 $-2/1$

x	$f(x)$
1	3
2	1
3	-1
4	-3

Function 2 $-1/1$

x	$f(x)$
1	5
2	4
3	3
4	2

> -2 but < -1
 $> F1$ but $< F2$

Which of the linear functions below has a slope greater than the slope for Function 1 but less than the slope for Function 2?

a. $f(x) = -1.5x - 2$

b. $f(x) = -2x - 4$

c. $f(x) = -2.5x + 3$

d. $f(x) = -3x + 6$

Transformations:

19. Without graphing. Describe the transformation performed to the function.

- a. $f(x) + 1$ moves graph up 1
- b. $f(x) - 7$ moves graph down 7
- c. $f(x + 1)$ moves graph left 1
- d. $f(x - 7)$ moves graph right 7
- e. $-2f(x)$ reflects, stretches graph by 2
- f. $\frac{3}{4}f(x)$ shrinks graph by $\frac{3}{4}$
- g. $-5f(x + 2) - 8$ reflects, stretches graph by 5, left 2, down 8
- h. $\frac{1}{2}f(x - 3) + 1$ shrinks graph by $\frac{1}{2}$, right 3, up 1

Arithmetic Sequences: Recursive: $a_1 = ?$ $a_n = a_{n-1} \pm d$

Explicit: $a_n = a_1 + d(n - 1)$

20. Find a_{15} for the sequence: $a_n = 2(n - 1) + 7$. $2(15-1) + 7 = 35$

21. Given the sequences, a. find the next three terms, b. write the recursive, and c. Write the explicit formula.

- a. 5, 8, 11, 14, 17, ... a. 20, 23, 26 b. $a_1 = 5$ $a_n = a_{n-1} + 3$ c. $a_n = 5 + 3(n - 1)$
- b. -7, -9, -11, -13, ... a. -15, -17, -19 b. $a_1 = -7$ $a_n = a_{n-1} - 2$ c. $a_n = -7 + -2(n - 1)$

22. The table to the right shows the relationship between the number of a term in a pattern and the value of that term. Write an explicit and recursive formula for to represent the table.

$a_1 = 2$ $d = 5$

Term Number	Value of Term
1	2
2	7
3	12
4	17
n	?

Recursive: $a_1 = ?$ $a_n = a_{n-1} \pm d$
 $a_1 = 2$ $a_n = a_{n-1} + 5$

Explicit: $a_n = a_1 + d(n - 1)$
 $a_n = 2 + 5(n - 1)$

23. The second term of an arithmetic sequence is $a_2 = 24$. The common difference is $d = -3$. Find the first term of the sequence.

27, 24

24. Gregory has agreed to donate \$250 to Spring Valley High School for its library. In addition, he will donate \$5 for every book a student at Spring Valley High School reads during the summer. The sequence shown represents the possible amounts that Gregory will be donating for the summer. 250, 255, 260, 265, 270, 275, ... What is the explicit formula that represents this situation? Recursive formula?

$a_1 = 250$ $d = 5$

Recursive: $a_1 = 250$ $a_n = a_{n-1} + 5$

Explicit $a_n = 250 + 5(n - 1)$

25. If $a_n = a_{n-1} - 4$ and $a_5 = 28$, what is a_7 ? 28, 24, 20
5th, 6th, 7th

Even and Odd functions:

Determine if the following are even, odd, or neither.

26. $f(x) = -5x^4 + 3x^2 - 1x^0$ N

27. $f(x) = 2x^5 + x^0$ O

28. $f(x) = 2x^4 + 7x^2 - 7x^0$ E

