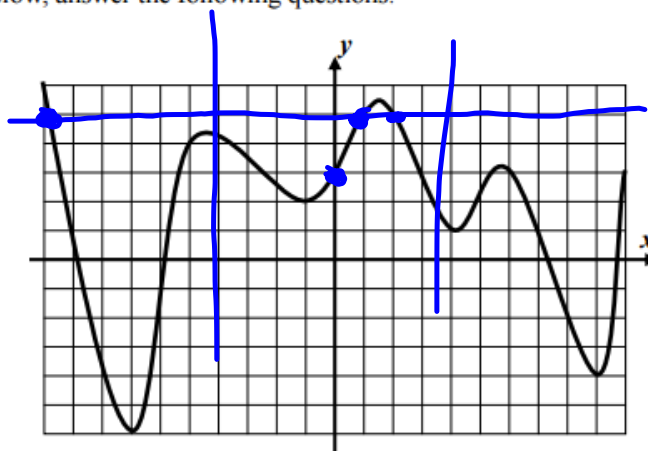


FLUENCY HWK DVE 11/03/15

1. Using the graph of the function $f(x)$ shown below, answer the following questions.

(a) Find the value of each of the following:

$f(-7) = -6$ $f(0) = 3$
 $f(4) = 1$ $f(9) = 4$



(b) For how many values of x does $f(x) = 5$?

Illustrate on the graph.

3

(c) What is the y-intercept of this relation?

3

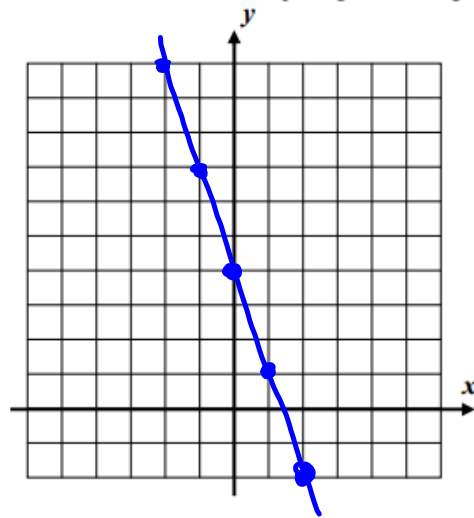
(d) State the maximum and minimum values the graph obtains.

5.5 -6

(e) Explain why the graph above represents a function.

2. Consider the function $f(x) = 3(2-x) - 2$. Fill out the function table below for the inputs given and graph the function on the axes provided.

x	$3(2-x) - 2$	(x, y)
-2	$3(2-(-2)) - 2$	-2, 10
-1	$3(2-(-1)) - 2$	-1, 7
0	$3(2-0) - 2$	0, 4
1	$3(2-1) - 2$	1, 1
2	$3(2-2) - 2$	2, -2



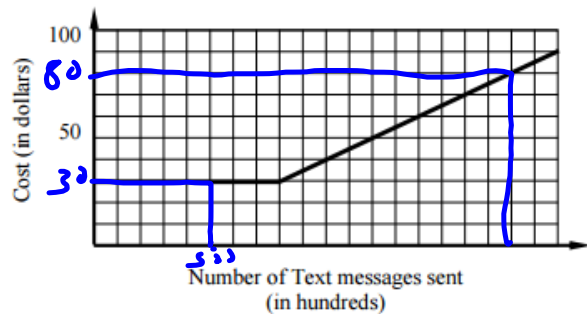
APPLICATIONS

3. The following graph represents the cost of a phone plan after a certain number of text messages used in a month. Analyze the graph to answer the following questions.

(a) How much would you have to pay if you used:

500 text messages \$30
 1800 text messages \$80

(b) Interpret $f(1400) = 60$



(c) What might have caused the graph to begin increasing at 800 text messages?

REASONING

4. Consider the following relationship given by the formula $f(x) = \begin{cases} 3-2x & x \leq 1 \\ 2x-1 & x > 1 \end{cases}$

(a) Evaluate each of the following:

$f(5) = 7$ $f(-2) = 3 - 2(-2)$
 $3 + 4 = 7$

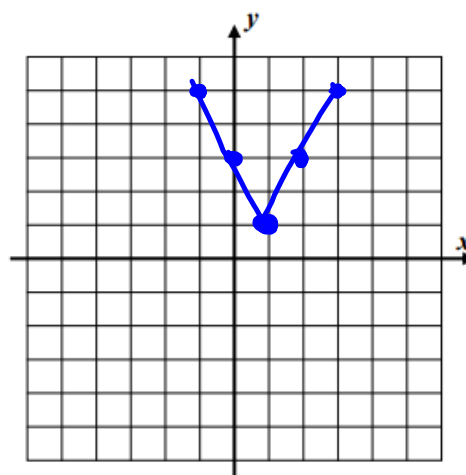
(b) Carefully evaluate $f(1)$.

$3 - 2(1) \Rightarrow 3 - 2 = 1$

(c) Fill out the table below for the inputs given. Keep in mind which formula you are using.

x	Rule/Calculation	(x, y)
-1		-1, 5
0		0, 3
1		1, 1
2		2, 3
3		3, 5

(d) Graph $y = f(x)$ on the axes below.



(e) What is the minimum value of the function? Circle the point that indicates this value on the graph.

1

Bell Ringer:

The height, $f(x)$, of a bouncing ball after x bounces is represented by $f(x) = 80(0.5)^x$. How many times higher is the first bounce than the fourth bounce?

- 1) 8
- 2) 2
- 3) 16
- 4) 4

$$80(0.5)^4$$

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{16}$$

$$80 \cdot \frac{1}{16} = \frac{80}{16} = 5$$

Unit 3 Quick Review:

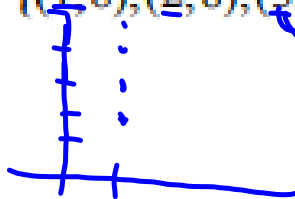
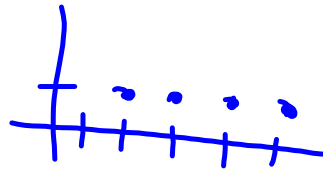
Which relation is a function?

1) $\{(2,1), (3,1), (4,1), (5,1)\}$

2) $\{(1,2), (1,3), (1,4), (1,5)\}$

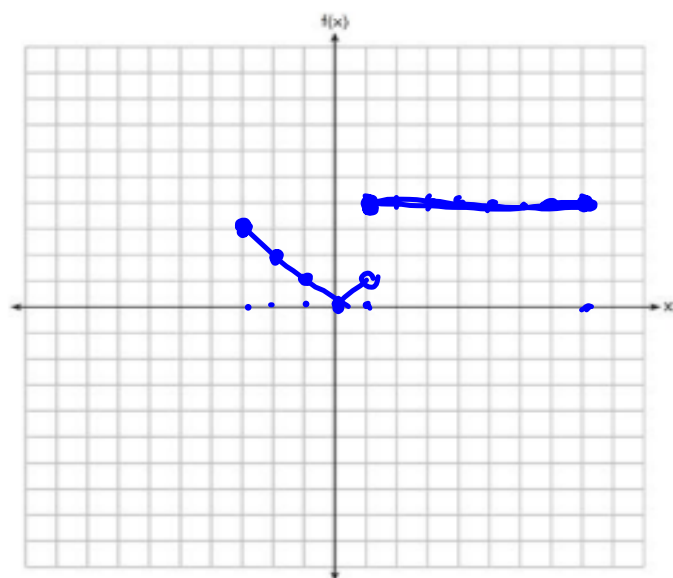
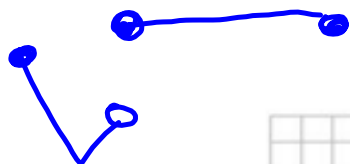
3) $\{(2,3), (2,2), (4,2), (2,4)\}$

4) $\{(1,6), (2,8), (3,9), (3,12)\}$



Graph the following function on the set of axes below.

$$f(x) = \begin{cases} |x|, & -3 \leq x < 1 \\ 4, & 1 \leq x \leq 8 \end{cases}$$



GRAPHICAL FEATURES AND TERMINOLOGY
COMMON CORE ALGEBRA I

Exercise #1: The function $y = f(x)$ is shown graphed below over the interval $-7 \leq x \leq 7$

- (a) Find the maximum and minimum values of the function. State the values of x where they occur as well.

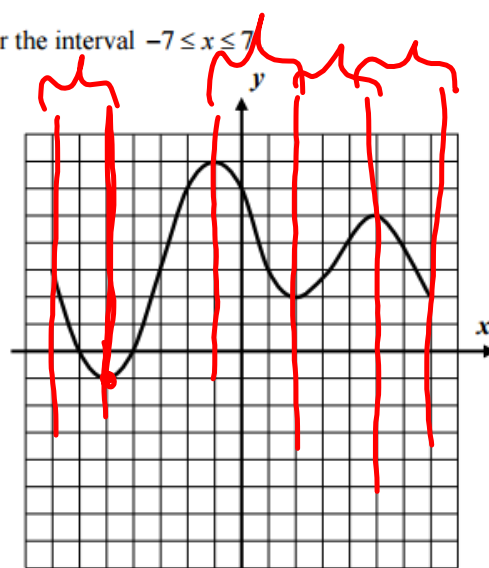
$$\begin{aligned} & (-1, 7) \text{ MAX} \\ & (-5, -1) \text{ MIN} \end{aligned}$$

- (b) What is the y -intercept of the function? Explain why a function cannot have more than one y -intercept.

6

- (c) Give the x -intercepts of the function. These are also known as the function's **zeros** because they are where $f(x) = 0$.

-4, -6



(d) Would you characterize the function as **increasing or decreasing** on the domain interval $-5 \leq x \leq -1$? Explain your choice.

INC.

(e) one additional interval over which the function is increasing and one over which it is decreasing.

Increasing: $2 \text{ to } 5$ express as an
 Decreasing: $5 \text{ to } 7$ ineq.,
 i.e. $x \leq -$

(f) The following points are known as **turning points**. Each can be classified as a **relative maximum** or a **relative minimum**. State which you think each is.

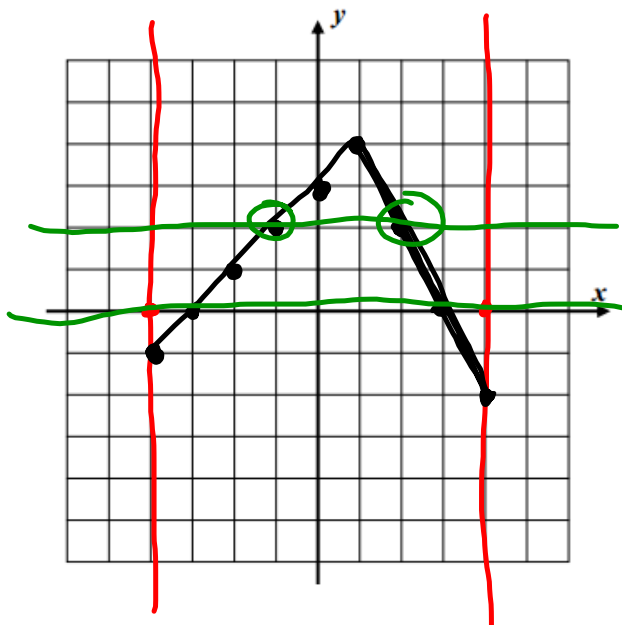
$(-5, -1)$	$(-1, 7)$	$(2, 2)$	$(5, 5)$
relative minimum	relative minimum	relative minimum	relative minimum
or	or	or	or
relative maximum	relative maximum	relative maximum	relative maximum

Let's get some more practice with **piecewise defined functions** and mix in our **function terminology** while we are at it.

Exercise #2: Consider the **piecewise linear** function given the equation $f(x) = \begin{cases} x+3 & x \leq 1 \\ 6-2x & x \geq 1 \end{cases}$

(a) Create a table of values for this function below over the interval $-4 \leq x \leq 4$. Then create a graph on the axes for this function.

x	Rule/Calculation	(x, y)
-4	$-4+3$	$-4, -1$
-3	$-3+3$	$-3, 0$
-2	$-2+3$	$-2, 1$
-1	$-1+3$	$-1, 2$
0	$0+3$	$0, 3$
1	$1+3=4$ $6-2(1)=4$	$1, 4$
2	$6-2(2)$	$2, 2$
3	$6-2(3)$	$3, 0$
4	$6-2(4)$	$4, -2$



(b) State the **zeroes of the function**.

3, -3

(d) Give the interval over which the function is increasing. Give the interval over which it is decreasing.

Increasing: _____

Decreasing: _____

(f) Use your graph to find all solutions to the equation $f(x) = 2$. Illustrate your solution graphically and find evidence in the table you created.

$x = 2, -1$

(c) State the function's y -intercept.

3

(e) Give the coordinates of the one turning point and classify it as either a relative maximum or relative minimum.

1, 4

(g) State the interval over which this function is positive. How can you tell this quickly from the graph?