

**Algebra 1 CC**  
**Assignment #30**  
**Average Rate of Change**

1. Consider the function given by  $f(x) = 9 - x^2$ . Find its average rate of change between the following points. Carefully show the work that leads to your final answer.

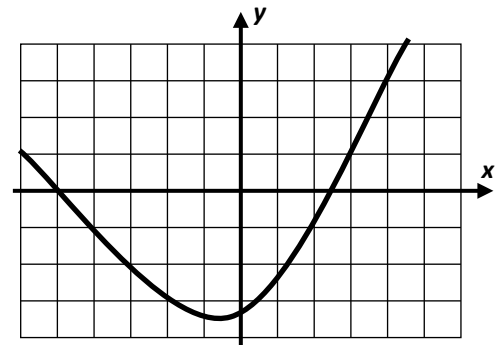
- (a)  $x = 0$  to  $x = 3$                       (b)  $x = -1$  to  $x = 5$

2. The function  $f(x)$  is given in the table. Find its average rate of change between the following points. Show the calculations that lead to your answer.

$x$	$f(x)$
-3	7
0	-2
1	3
4	-8

- (a)  $x = -3$  to  $x = 1$                       (b)  $x = 0$  to  $x = 4$ .

3. The function  $f(x)$  is given in the graph below. Find its average rate of change between the following points. Show the calculations that lead to your answer.



- (a)  $x = -6$  to  $x = 4$                       (b)  $x = -2$  to  $x = 2$ .

4. The table shows the number of points the Arlington girls team scored in their last basketball game where  $t$  is the time passed in minutes and  $f(t)$  the total number of points scored after  $t$  minutes.

$t$	$f(t)$
0	0
8	30
16	48
24	55
32	64

- (a) What was the average rate they were shooting in the first half of the game? Be sure to include proper units in your answer.
- (b) What was their average rate over the whole game?
- (c) Given your answers above which half of the game do you feel they had a better rate of scoring? Explain.

5. Consider the function given by  $f(x) = 6x + 5$ .

- (a) Find its average rate of change from  $x = 1$  to  $x = 5$ .
- (b) Find its average rate of change from  $x = -2$  to  $x = 6$ .
- (c) The average rate of change for this function is always 6 (as you should have found in the first two parts of the problem). What type of function has a constant average rate of change? What do we call this average rate of change in this case? Search the Internet if needed.

R1. What is the value of  $\frac{x^2 - 4y}{2}$ , if  $x = 4$  and  $y = -3$

R2. If  $2x + 5 = -25$  and  $-3m - 6 = 48$ , what is the product of  $x$  and  $m$ ?

R3. Solve for  $x$  and graph your answer on a number line:  $-4x + 2 > 10$

R4. Solve for  $y$ :  $3x + 4y = 12$

R5. Solve for  $k$ :  $x + 3y = 10$ ;  $(13, k)$

R6. A method for solving  $5(x - 2) - 2(x - 5) = 9$  is shown below. Identify the property used to obtain each of the two indicated steps.

$$5(x - 2) - 2(x - 5) = 9$$

$$5x - 10 - 2x + 10 = 9 \quad (1) \text{ _____}$$

$$5x - 2x - 10 + 10 = 9 \quad (2) \text{ _____}$$

$$3x + 0 = 9$$

$$3x = 9$$

$$x = 3$$

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1a. -3

1b. -4

2a. -1

2b.  $\frac{-3}{2}$

3a.  $\frac{1}{5}$

3b.  $\frac{1}{2}$

4a. 3 points per minute

4b. 2 points per minute

4c. First half because they were scoring more points per minute in the first half (3 points per minute) than they were in the game over all (2 points per minute).

5a. 6

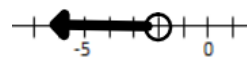
5b. 6

5c. Linear function; slope

R1. 14

R2. 270

R3.  $x < -2$



R4.  $y = \frac{12 - 3x}{4}$  or  $y = 3 - \frac{3}{4}x$

R5.  $y = -1$

R6. (1) Distributive Property

(2) Commutative Property