

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

### Exercise Set 2.5: Average Rate of Change

For problems 1 – 8, find the slope of the line that passes through the two points.

1.  $(1, 7), (2, -4)$

2.  $(-3, 5), (6, 2)$

3.  ~~$(2, 3), (4, 6)$~~

4.  ~~$(5, 12), (8, 4)$~~

5.  $(-0.25, -1.82), (3.20, -2.97)$

6.  $(1.68, 4.72), (-3.32, 1.22)$

7.  ~~$(4, 7), (5, 12)$~~

8.  ~~$(3, 5), (5, 12)$~~

For problems 9 – 12, use the table of values to find the average rate of change over the given interval.

x	1	3.8	4.7	9	13.8	12
y	3	5.1	8.7	15.8	25.1	30.86

9.  $[1, 9]$

10.  $[9, 12]$

11.  $[3.8, 13.8]$

12.  $[4.7, 13.8]$

For problems 13 – 16, use the table of values to find the average rate of change over the given interval.

x	1	2	3	3.5	3.7	6
y	40	25	18	15	18	38

13.  $[1, 3]$

14.  $[2, 6]$

15.  $[2, 3.7]$

16.  $[3.5, 6]$

For problems 17 – 20, find the average rate of change of  $f(x) = x^2 + 5x + 6$  on each pair of intervals.

17.  $[1.9, 2]$  and  $[1.99, 2]$

18.  $[2, 2.1]$  and  $[2, 2.01]$

19.  $[0.9, 1]$  and  $[0.99, 1]$

20.  $[1, 1.1]$  and  $[1, 1.01]$

For problems 21 – 26, find the average rate of change of each function on the given interval.

21.  $f(x) = x^2 - 4x - 12$  on  $[0, 6]$

22.  $f(x) = x^2 - 4x - 12$  on  $[-1, 7]$

23.  $f(x) = 3x^2 - x - 2$  on  $[-1, 4]$

24.  $f(x) = 3x^2 - x - 2$  on  $[4, 7]$

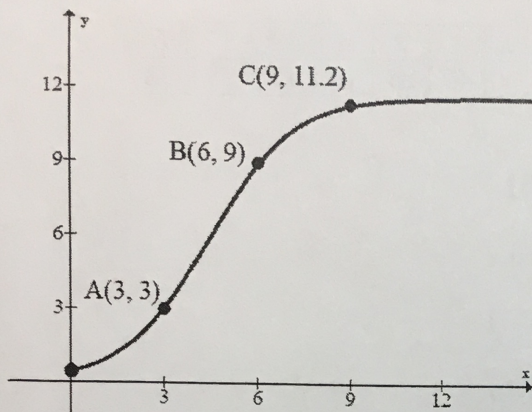
25.  $f(x) = 0.02x^2 - 1.6x + 20.5$  on  $[25, 35]$

26.  $f(x) = 0.05x^2 - 1.3x + 22.8$  on  $[13, 23]$

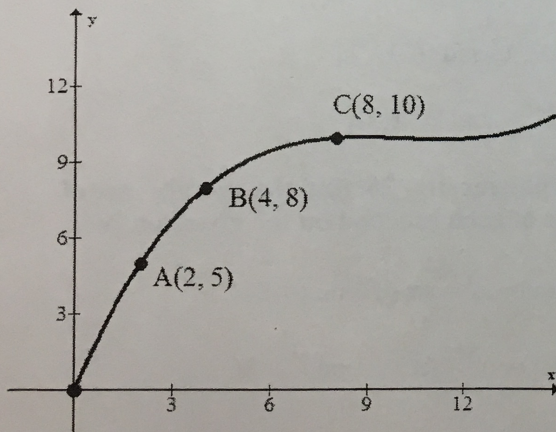


### Exercise Set 2.5: Average Rate of Change

33. Compute the average rate of change from A to B, from B to C and from A to C. Which one gives the largest average rate of change?



34. Compute the average rate of change from A to B, from B to C and from A to C. Which one gives the smallest average rate of change?



35. The table below gives the population of California since 1970:

Year	1970	1980	1990	2000	2010
Population (in millions)	20.0	23.7	29.8	33.9	37.3

- A. Find the average rate of change for each decade.
- B. During which decade was the average rate of change the largest?
- C. Use the average rate of change during the decade 1990 to 2000 to approximate the California population in 1993.
- D. Use the average rate of change during the decade 2000 to 2010 to approximate the California population in 2009.
36. The table below gives the population of Texas since 1970:

Year	1970	1980	1990	2000	2010
Population (in millions)	11.2	14.2	17.0	20.9	25.1

- A. Find the average rate of change for each decade.
- B. During which decade was the average rate of change the largest?
- C. Use the average rate of change during the decade 1990 to 2000 to approximate the Texas population in 1994.
- D. Use the average rate of change during the decade 2000 to 2010 to approximate the Texas population in 2008.