MATD 0370 (ELEMENTARY ALGEBRA)
EXERCISE SET 4.1

For each of the following pairs of points, do the following:

(a.) Plot and label the points (remember to write the coordinates in parentheses).
(b.) Draw a line through the points, putting an arrow on each end of the line.
(c.) Determine the x-intercept of the line (i.e., at what point does the line cross the x-axis?).
(d.) Determine the y-intercept of the line (i.e., at what point does the line cross the y-axis?).
(e.) Determine the rise of the line, when moving along the line **from the point given first in the problem to the point given second**.
(f.) Determine the run of the line, when moving along the line **from the point given first in the problem to the point given second**.
(g.) Determine the slope of the line, and simplify your answer if possible.

1. (–3, 2) and (1, 6)

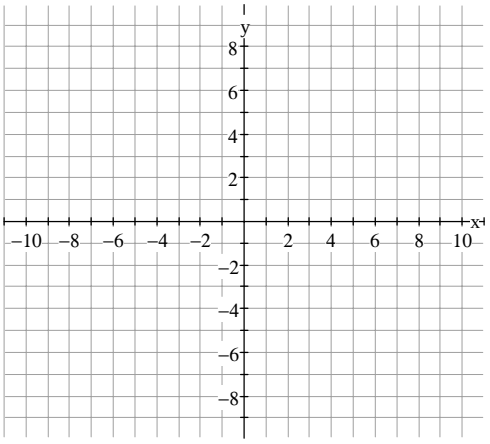
(c.) x-intercept: _____

(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____



2. (4, 8) and (–2, –4)

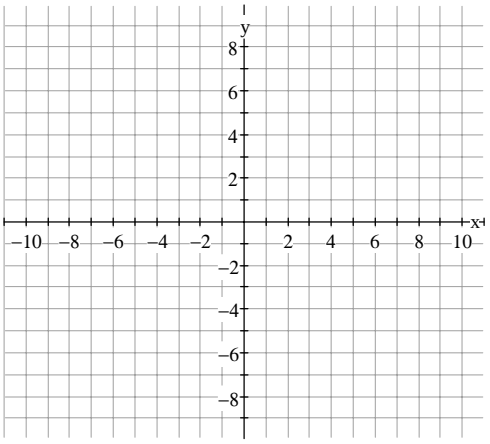
(c.) x-intercept: _____

(d.) y-intercept: _____

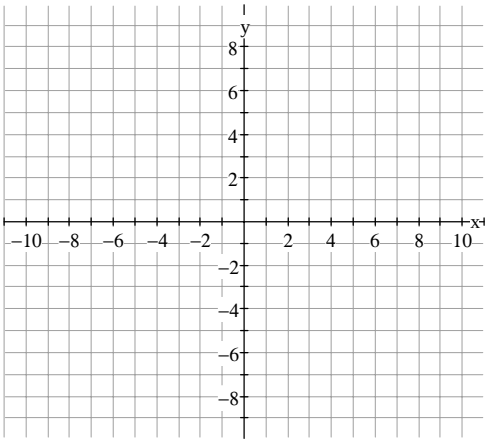
(e.) rise: _____

(f.) run: _____

(g.) slope: _____



3. (–2, 10) and (6, –10)



(c.) x-intercept: _____

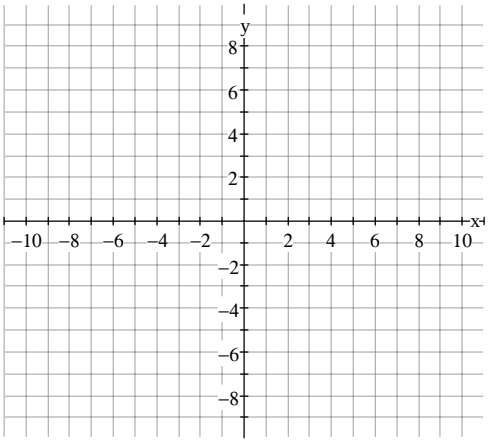
(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____

4. (3, 7) and (3, –1)



(c.) x-intercept: _____

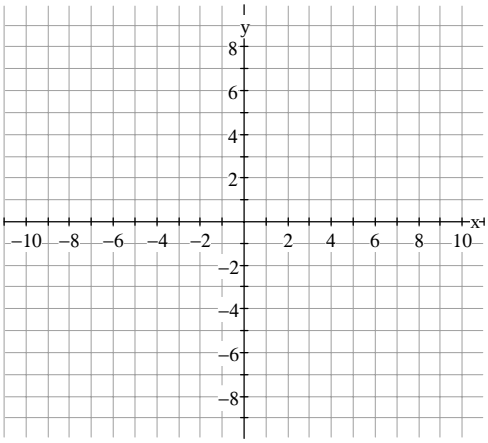
(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____

5. (–1, 2) and (5, –4)



(c.) x-intercept: _____

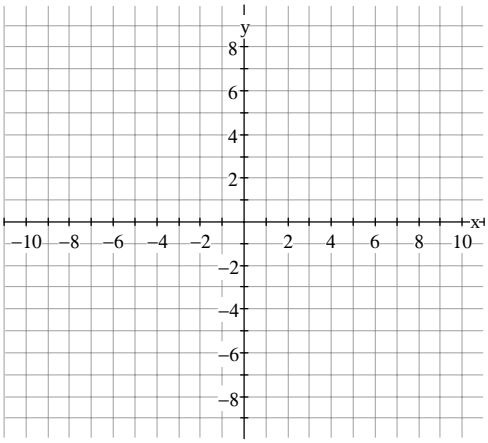
(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____

6. (–7, 3) and (1, 3)



(c.) x-intercept: _____

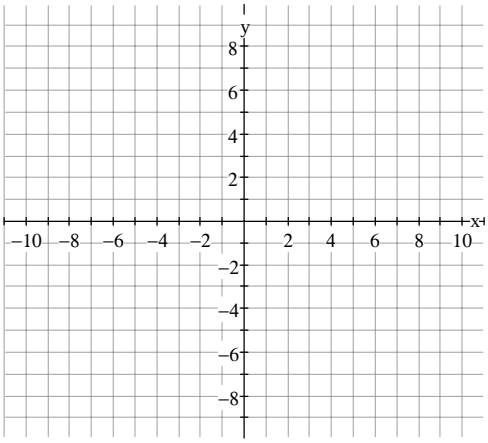
(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____

7. (–6, –2) and (3, 4)



(c.) x-intercept: _____

(d.) y-intercept: _____

(e.) rise: _____

(f.) run: _____

(g.) slope: _____

Based on your observations in the problems above and on your other experiences, fill in the blanks below to make true statements.

8. The "run" of a line can be calculated as the difference of the _____ coordinates of two points on the line.

9. All points on a vertical line have the same _____ coordinate.

10. The "run" of a vertical line has value _____.

11. The "rise" of a line can be calculated as the difference of the _____ coordinates of two points on the line.

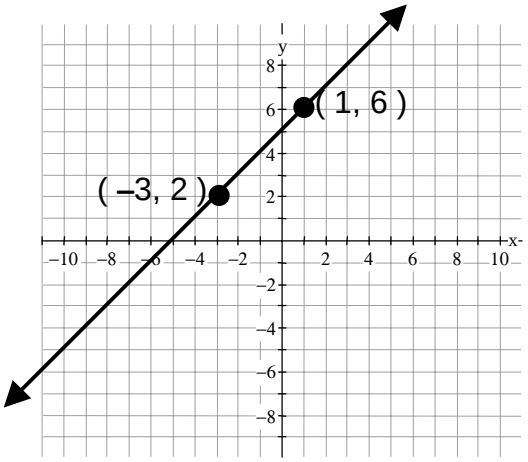
12. All points on a horizontal line have the same _____ coordinate.

13. The "rise" of a horizontal line has value _____.

14. The slope of a vertical line is _____ and the slope of a horizontal line is _____.

ANSWERS:

1. (–3, 2) and (1, 6)



(c.) x-intercept: (–5, 0)

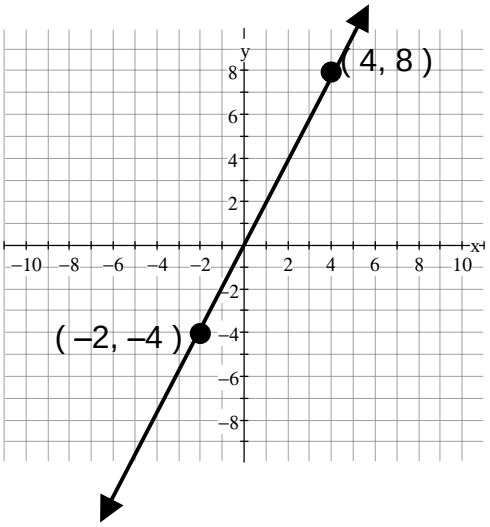
(d.) y-intercept: (0, 5)

(e.) rise: 4

(f.) run: 4

(g.) slope: $\frac{4}{4} = 1$

2. (4, 8) and (–2, –4)



(c.) x-intercept: (0, 0)

(d.) y-intercept: (0, 0)

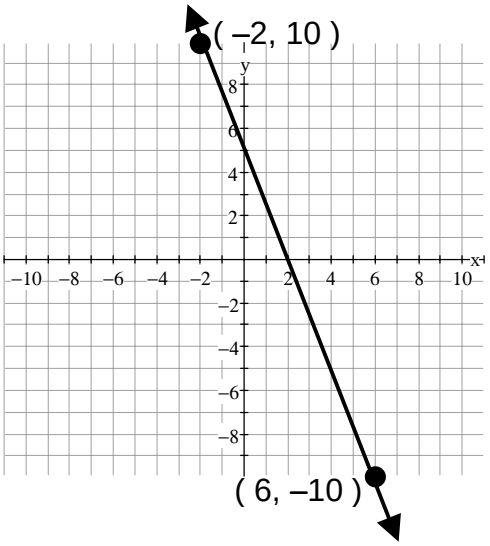
(e.) rise: –12

(f.) run: –6

(g.) slope: $\frac{-12}{-6} = 2$

ANSWERS:

3. (–2, 10) and (6, –10)



(c.) x-intercept: (2, 0)

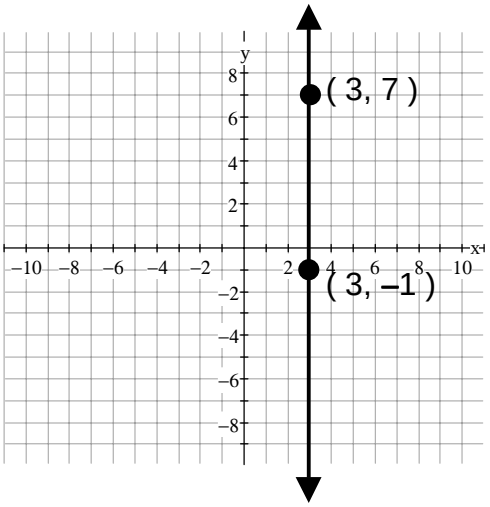
(d.) y-intercept: (0, 5)

(e.) rise: –20

(f.) run: 8

(g.) slope: $\frac{-20}{8} = -\frac{5}{2}$

4. (3, 7) and (3, –1)



(c.) x-intercept: (3, 0)

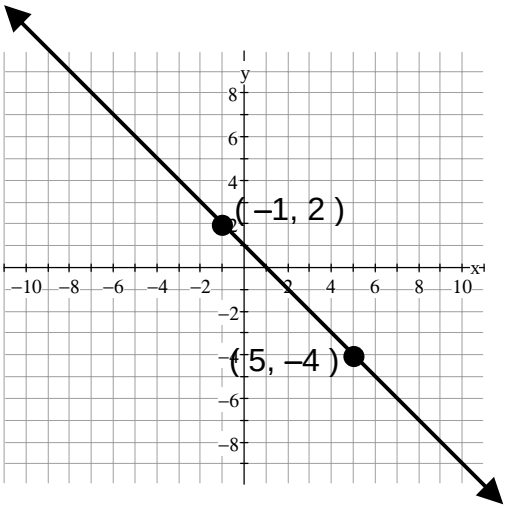
(d.) y-intercept: None

(e.) rise: –8

(f.) run: 0

(g.) slope: $\frac{-8}{0} =$ ***undefined***

5. (–1, 2) and (5, –4)



(c.) x-intercept: (1, 0)

(d.) y-intercept: (0, 1)

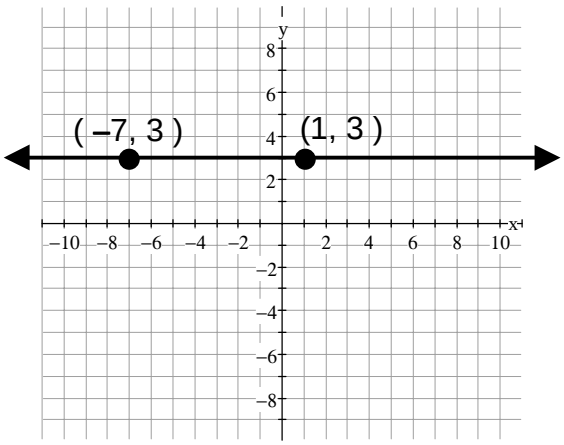
(e.) rise: –6

(f.) run: 6

(g.) slope: $\frac{-6}{6} = -1$

ANSWERS:

6. (–7, 3) and (1, 3)



(c.) x-intercept: None

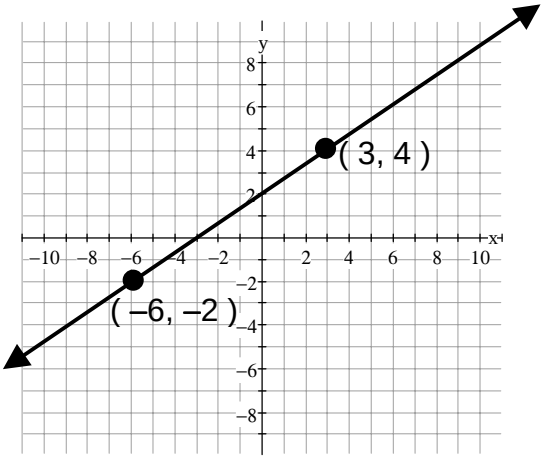
(d.) y-intercept: (0, 3)

(e.) rise: 0

(f.) run: 8

(g.) slope: $\frac{0}{8} = 0$

7. (–6, –2) and (3, 4)



(c.) x-intercept: (–3, 0)

(d.) y-intercept: (0, 2)

(e.) rise: 6

(f.) run: 9

(g.) slope: $\frac{6}{9} = \frac{2}{3}$

8. The "run" of a line can be calculated as the difference of the x coordinates of two points on the line.

9. All points on a vertical line have the same x coordinate.

10. The "run" of a vertical line has value zero.

11. The "rise" of a line can be calculated as the difference of the y coordinates of two points on the line.

12. All points on a horizontal line have the same y coordinate.

13. The "rise" of a horizontal line has value zero.

14. The slope of a vertical line is undefined and the slope of a horizontal line is zero.