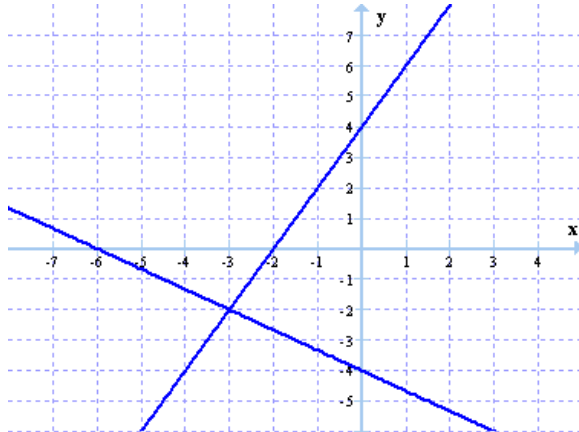


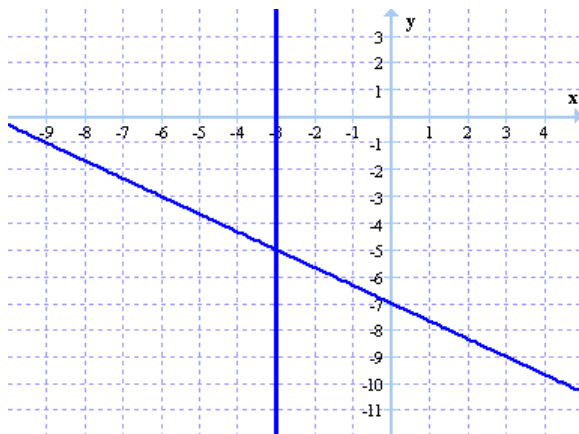
## Section 3.3 Solving Systems of Linear Equations in Two Variables Graphically and Numerically

1. The graph of a system of linear equations is given below.



Which of the following is the solution to the system?

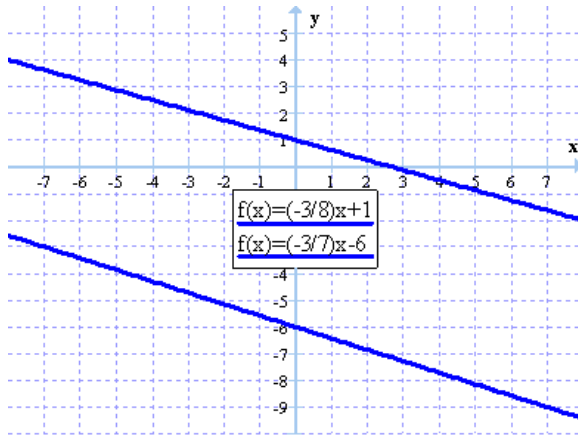
- (a)  $(-237, 318)$
  - (b)  $(-3, -2)$
  - (c)  $(-6, 0)$
  - (d) No solution
  - (e) Infinitely many solutions
2. The graph of a system of linear equations is given below.



Which of the following is the solution to the system?

- (a)  $(-3, -5)$
- (b)  $(-3, -7)$
- (c) No solution
- (d) Infinitely many solutions

3. The graph of a system of linear equations is given below, along with the equations themselves.



Which of the following is the solution to the system?

- (a)  $(0, -6)$
- (b)  $(0, 1)$
- (c)  $(3, 0)$
- (d)  $(-392/3, 50)$
- (e) No solution
- (f) Infinitely many solutions

4. A table of values for a system of linear equations is given below.

|       |    |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|----|
| $x$   | -8 | -6 | -4 | -2 | 0  | 2  | 4  | 6  |
| $y_1$ | -6 | -3 | 0  | 3  | 6  | 9  | 12 | 15 |
| $y_2$ | 2  | 1  | 0  | -1 | -2 | -3 | -4 | -5 |

Which of the following is the solution to the system?

- (a)  $(0, 0)$
- (b)  $(-4, 0)$
- (c)  $(0, 6, -2)$
- (d) No solution

(e) Infinitely many solutions

5. A table of values for a system of linear equations is given below.

|       |    |    |   |    |    |    |    |    |
|-------|----|----|---|----|----|----|----|----|
| $x$   | -2 | -1 | 0 | 1  | 2  | 3  | 4  | 5  |
| $y_1$ | -3 | -1 | 1 | 3  | 5  | 7  | 9  | 11 |
| $y_2$ | 5  | 3  | 1 | -1 | -3 | -5 | -7 | -9 |

Which of the following is the solution to the system?

- (a)  $(0, 1)$
- (b)  $(-1, -1)$
- (c)  $(-1, 3)$
- (d) No solution
- (e) Infinitely many solutions

6. A table of values for a system of linear equations is given below.

|       |     |    |    |    |    |    |    |    |
|-------|-----|----|----|----|----|----|----|----|
| $x$   | -2  | -1 | 0  | 1  | 2  | 3  | 4  | 5  |
| $y_1$ | 0   | -1 | -2 | -3 | -4 | -5 | -6 | -7 |
| $y_2$ | -10 | -9 | -8 | -7 | -6 | -5 | -4 | -3 |

Which of the following is the solution to the system?

- (a)  $(-5, -5)$
- (b)  $(3, -5)$
- (c)  $(3, -5, -5)$
- (d) No solution
- (e) Infinitely many solutions

7. A table of values for a system of linear equations is given below.

|       |    |    |    |    |   |   |   |   |
|-------|----|----|----|----|---|---|---|---|
| $x$   | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| $y_1$ | 5  | 5  | 5  | 5  | 5 | 5 | 5 | 5 |
| $y_2$ | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

Which of the following is the solution to the system?

- (a)  $(-4, 5)$

- (b) (0, 0)
- (c) (5, 5)
- (d) No solution
- (e) Infinitely many solutions

8. A table of values for a system of linear equations is given below.

|       |   |   |    |    |    |     |     |     |
|-------|---|---|----|----|----|-----|-----|-----|
| $x$   | 4 | 7 | 10 | 13 | 16 | 19  | 22  | 25  |
| $y_1$ | 3 | 0 | -3 | -6 | -9 | -12 | -15 | -18 |
| $y_2$ | 3 | 0 | -3 | -6 | -9 | -12 | -15 | -18 |

Which of the following is the solution to the system?

- (a) (4, 3)
- (b) (0, 0)
- (c) No solution
- (d) Infinitely many solutions

9. Which of the following ordered pairs is a solution to the system

$$f(x) = \begin{cases} -2x + 3y = 11 \\ -2x + 2y = 4 \end{cases} ?$$

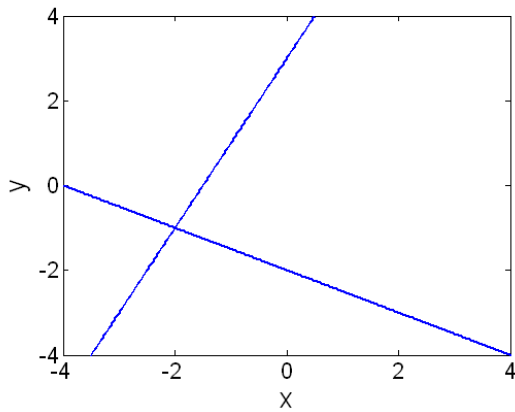
- (a) (-4, 1)
- (b) (1, 3)
- (c) (5, 7)
- (d) (-1, 3)

10. What is the solution to the following system of equations?

$$\begin{aligned} 2x + y &= 3 \\ 3x - y &= 7 \end{aligned}$$

- (a)  $x = 4$  and  $y = -5$
- (b)  $x = 4$  and  $y = 5$
- (c)  $x = 2$  and  $y = -1$
- (d)  $x = 2$  and  $y = 1/2$
- (e) There are an infinite number of solutions to this system.
- (f) There are no solutions to this system.

11. Which of the following systems of equations could be represented in the graph below?



- (a)  $3x + 3y = -6, x + 2y = 3$
- (b)  $x - y = -5, 2x + y = 4$
- (c)  $-8x + 4y = 12, 2x + 4y = -8$
- (d)  $-x + 3y = 9, 2x - y = 4$

12. What is the solution to the following system of equations?

$$\begin{aligned} 2x + y &= 3 \\ 4x + 2y &= 6 \end{aligned}$$

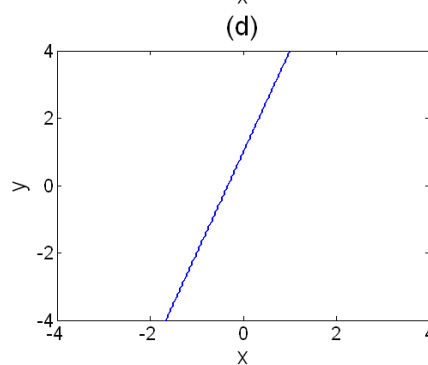
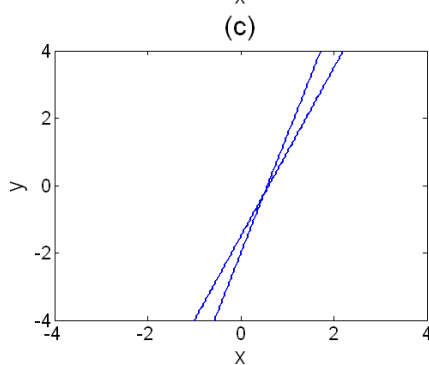
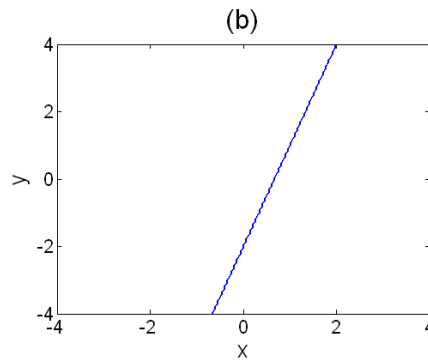
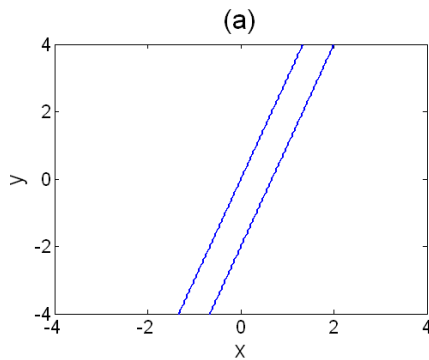
- (a)  $x = 0$  and  $y = 0$
- (b)  $x = 2$  and  $y = -1$
- (c)  $x = 0$  and  $y = 1$
- (d)  $x = 0$  and  $y = 3$
- (e) There are an infinite number of solutions to this system.
- (f) There are no solutions to this system.

13. Without actually solving, what can you say about the system  $f(x) = \begin{cases} y = 3x + 7 \\ y = 3x - 2 \end{cases}$  ?

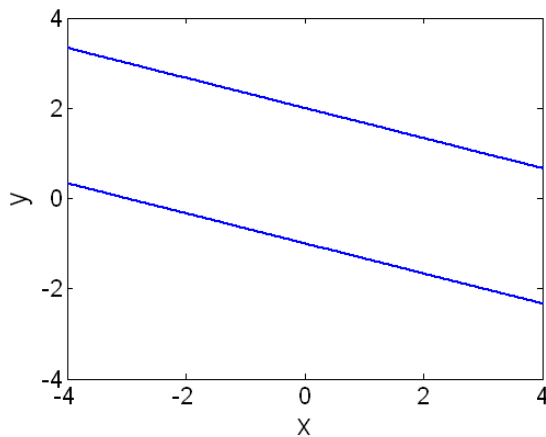
- (a) consistent, one solution
- (b) consistent, dependent (infinitely many solutions)
- (c) inconsistent

14. Which of the graphs below could represent the following linear system?

$$\begin{aligned} 3x - y &= 2 \\ -9x + 3y &= -6 \end{aligned}$$



15. Which of the following systems of equations could be represented in the graph below?



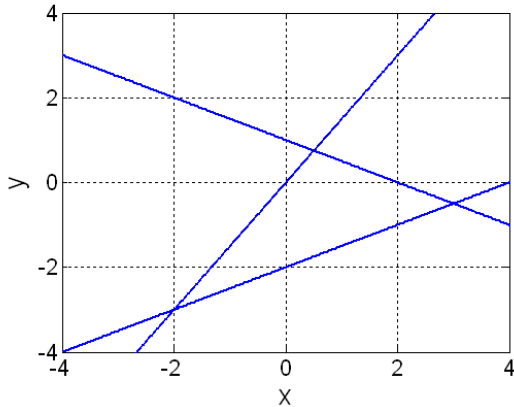
- (a)  $-x + 3y = 6, 2x + 6y = -6$
- (b)  $-x + 3y = 6, 2x + 6y = 12$
- (c)  $x + 3y = 6, 2x + 6y = 12$
- (d)  $x + 3y = 6, x + 3y = -3$

16. What is the solution to the following system of equations?

$$\begin{aligned} -3x + 2y &= 4 \\ 12x - 8y &= 10 \end{aligned}$$

- (a)  $x = -4/3$  and  $y = 0$
- (b)  $x = 1/2$  and  $y = -1/2$
- (c)  $x = 0$  and  $y = 2$
- (d)  $x = 1/3$  and  $y = 5/2$
- (e) There are an infinite number of solutions to this system.
- (f) There are no solutions to this system.

17. We have a system of three linear equations with two unknowns, as plotted in the graph below. How many solutions does this system have?



- (a) 0
- (b) 1
- (c) 2
- (d) 3
- (e) Infinite

18. A system of linear equations could *not* have exactly \_\_\_\_\_ solutions.

- (a) 0
- (b) 1
- (c) 2
- (d) infinite

(e) All of these are possible numbers of solutions to a system of linear equations.

19. Is the ordered triple  $(2, -1, 3)$  a solution of the following linear system?

$$\begin{cases} 5x + 3y - 2z = 1 \\ x - y + z = 6 \\ 2x + 2y - z = -1 \end{cases}$$

- (a) Yes, and I am very confident.
- (b) Yes, but I am not very confident.
- (c) No, but I am not very confident.
- (d) No, and I am very confident.

20. Solve the following linear system.

$$\begin{cases} x + 5y + 3z = 7 \\ 2x + 11y - 4z = 6 \end{cases}$$

- (a)  $\{(7z + 47, -2z - 8, z)\}$
- (b)  $\{(-53z + 47, 10z - 8, z)\}$
- (c)  $\{(47z + 47, -10z - 8, z)\}$
- (d) There is no solution. (The solution set is the empty set.)