Chapter 9

Exercise Set 9.1

Solve the given system of equations by graphing. Sketch the graph of each equation in the system on the same set of axes. Determine whether the system has a unique solution, no solution or infinitely many solutions. If it has a unique solution, estimate that solution from the graph and determine whether your estimate is correct.

1. $x - y = 2$
   $x + y = 4$

2. $2x + 3y = 10$
   $x - y = 0$

3. $3x + 4y = 12$
   $3x + 4y = 24$

4. $x + y = 1$
   $-x + y = 3$

5. $2x + y = 6$
   $x + 2y = 6$

6. $x - 2y = 4$
   $-2x + 4y = -8$

7. $x - y = 3$
   $x + 3y = 7$

8. $y = 2x + 1$
   $y = 2x - 1$

9. $y = x + 1$
   $y = -2x + 4$

10. $3x + 2y = 6$
    $x - y = 2$

11. $6x + 4y = 12$
    $9x + 6y = 18$

12. $x + y = 3$
    $x - 2y = -9$

Exercise Set 9.2

Solve the given system by substitution.

1. $x+2y=5$
   $y=2x+1$

2. $3x+2y=0$
   $x=y-5$

3. $x=3y-7$
   $x=-y+1$

4. $y=2x-3$
   $y=-3x+17$

5. $x-y=3$
   $3x+y=5$

6. $x+y=8$
   $3x-2y=-1$

7. $2x+y=5$
   $-x+3y=8$

8. $3x+4y=1$
   $2x-y=19$

9. $2x+3y=10$
   $2x+y=-6$

10. $3x+2y=5$
    $x+y=4$

11. $2x+4y=-9$
    $x-3y=8$

12. $3x-4y=3$
    $6x-y=13$

Solve the given system by elimination.

13. $x+2y=11$
    $3x-2y=1$

14. $2x-y=4$
    $2x+3y=-4$

15. $x+y=7$
    $2x-y=5$

16. $5x-3y=4$
    $-5x+7y=-16$

17. $2x+3y=-1$
    $4x+2y=2$

18. $3x-4y=6$
    $-9x+5y=-18$

19. $5x-3y=0$
    $3x+y=14$

20. $x+5y=1$
    $x-3y=9$

21. $3x-2y=4$
    $5x-3y=7$

22. $2x+3y=12$
    $7x-5y=11$

23. $4x-3y=5$
    $2x+6y=5$

24. $4x-10y=-1$
    $8x+5y=8$

Solve the given system using either substitution or elimination.

25.
$$4x - 3y = 5$$
$$x = -1$$

26.
$$7x - 2y = 15$$
$$y = -3$$

27.
$$6x - 3y = 27$$
$$x - 8y = 12$$

28.
$$-2x + 5y - 11 = 0$$
$$x - 3y + 6 = 0$$

29.
$$x + y - 9 = 0$$
$$4x - 5y = 0$$

30.
$$y = -3x + 12$$
$$y = 2x + 2$$

31.
$$x = 7y + 10$$
$$x = -2y + 1$$

32.
$$2x - 4y = 5$$
$$3x + 5y = 2$$

33.
$$3x - 8y + 4 = 0$$
$$6x + 4y - 7 = 0$$

34.
$$x = 2y - 5$$
$$5x + 6y + 1 = 0$$

35.
$$y = -5x + 1$$
$$10x - 3y = 7$$

36.
$$x + y = 1$$
$$2x - y = 3$$

37.
$$2x - 3y = 6$$
$$-4x + 6y = 9$$

38.
$$3x - 5y = 0$$
$$y = \frac{3}{5}x + 1$$

39.
$$3x - 4y = 5$$
$$-9x + 12y = -15$$

40.
$$3x + 2y = 6$$
$$y = -\frac{3}{2}x + 3$$

Solve the given system by graphing. Confirm your answer by solving the system analytically using either substitution or elimination.

41.
$$x + y = 3$$
$$2x - y = 0$$

42.
$$2x - 3y = 9$$
$$x + 2y = 1$$

43.
$$y = x + 3$$
$$y = 2x - 1$$

44.
$$2x + y = -1$$
$$x - 2y = -8$$