

Solve each equation if possible.

1. $|x - 3| = 5$

2. $2|x - 4| = 16$

3. Why is there no solution to this equation? $|4x + 5| = -1$

Solve each inequality and graph on a number line.

4. $|3d + 7| > 5$

5. $\left| \frac{2}{3}x + \frac{3}{4} \right| \leq 4$

Solve each system using any method and identify as consistent or inconsistent.

6. $\begin{cases} y = 3x + 7 \\ y = 2x - 6 \end{cases}$

7. $\begin{cases} x + y = 7 \\ 28 - 2y = 2x \end{cases}$

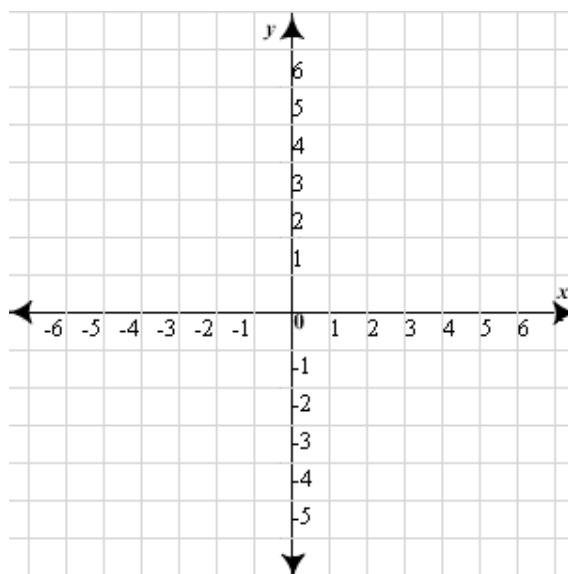
8. $\begin{cases} 4x + 5y = 3 \\ 2x + 5y = -11 \end{cases}$

9.
$$\begin{cases} 2x + 5y = 7 \\ 3y + 2x = 17 \end{cases}$$

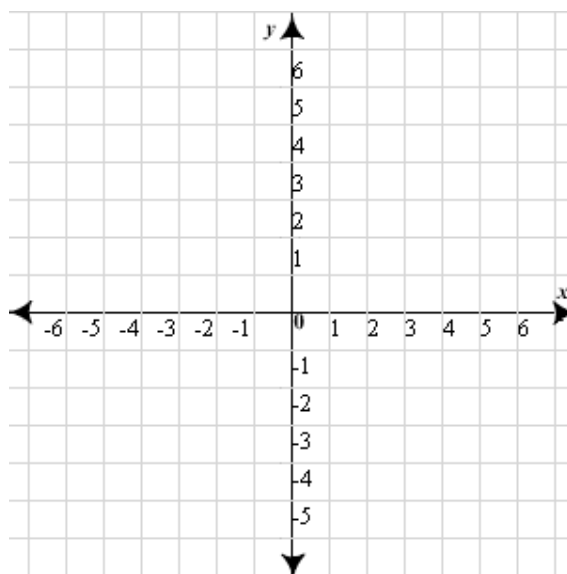
10.
$$\begin{cases} 2x + y = 1 \\ x + y = 2 \end{cases}$$

Graph the following inequalities.

11. $x - 2y < 4$

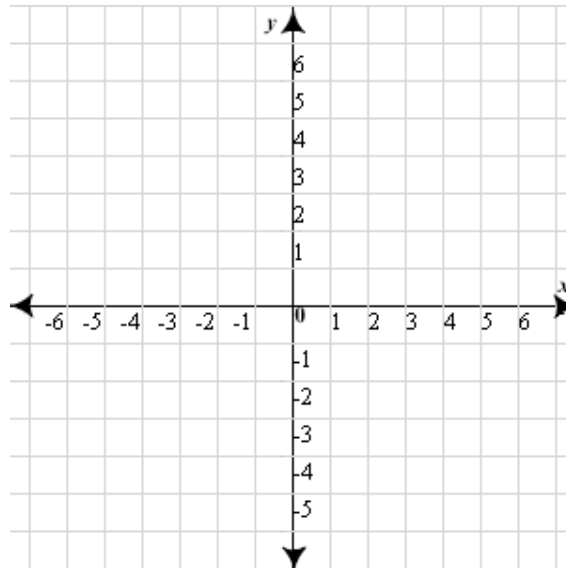


12. $2x - y \geq -3$



Solve by graphing.

13.
$$\begin{cases} 3x - y > -2 \\ x - y \geq -1 \end{cases}$$



14. A daughter is 28 years younger than her father. In 5 years, the father will be 3 times as old as his daughter. How old is each now?

15. A coin bank contains \$17.00 in pennies and nickels. If there are 1140 coins in the bank, how many of each type of coin are in the bank?

Simplify. Make sure that there are no negative exponents.

16. $(5p^4)(6p^7)$

17. $\left(\frac{4w^2}{w}\right)^2$

18. $(5x^{-1}y^3)^2(3x^4y^{-5})$

19. $\frac{(4x^2)^0}{(2)}$

20. $(4 \times 10^5)(3 \times 10^5)$

Find the sum or difference. Express your answers in standard form.

21. $(3y^2 + 5y - 6) - (7y^3 - 2y + 4)$

22. $(7 - 9x^2 + 3xy) + (3 - 2xy + x^2)$

Find each product.

23. $(x + 3)(x - 4)$

24. $(4w + z)(2w + 3z)$

25. $(5d + 1)(5d - 1)$

Factor each polynomial completely.

26. $9r^2 - 4$

27. $m^2 - 10m + 25$

28. $b(b - 5) + 2(b - 5)$

29. $7a^3 + 28a^2 - 35a$

30. $2r^2 - 7r - 15$

Solve each equation by factoring.

31. $x^2 + 3x - 4 = 0$

32. $t^2 - 4 = 0$

33. $n^2 - 8n = -15$

Solve the equation using square roots.

34. $(x + 1)^2 - 1 = 0$

35. $6(x - 3)^2 - 12 = 0$

36. $3x^2 = 135$

37. $x^2 = \frac{25}{81}$

Solve the equation by completing the square.

38. $x^2 - 2x - 15 = 0$

39. $x^2 + 4x = 1$

40. $x^2 + x - 6 = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Find the discriminant and tell how many real solutions.

41. $3g^2 - 2g + 5 = 0$

42. $-2x^2 + 7x = 5$

Solve using the quadratic formula

43. $2y^2 - 8y = 8$

44. $x^2 + 9x = 0$

Simplify each expression and state any restriction on the variable.

45. $\frac{m^2 + 4m}{m^2 + m - 12}$

46. $\frac{12 + 8d}{4d}$