

SOLVING MIXED EQUATIONS AND INEQUALITIES**#27**

Solve these various types of equations.

1. $2(x - 3) + 2 = -4$

2. $6 - 12x = 108$

3. $3x - 11 = 0$

4. $0 = 2x - 5$

5. $y = 2x - 3$
 $x + y = 15$

6. $ax - b = 0$
(solve for x)

7. $0 = (2x - 5)(x + 3)$

8. $2(2x - 1) = -x + 5$

9. $x^2 + 5^2 = 13^2$

10. $2x + 1 = 7x - 15$

11. $\frac{5 - 2x}{3} = \frac{x}{5}$

12. $2x - 3y + 9 = 0$
(solve for y)

13. $x^2 + 5x + 6 = 0$

14. $x^2 = y$
 $100 = y$

15. $x - y = 7$
 $y = 2x - 1$

16. $x^2 - 4x = 0$

17. $x^2 - 6 = -2$

18. $\frac{x}{2} + \frac{x}{3} = 2$

19. $x^2 + 7x + 9 = 3$

20. $y = x + 3$
 $x + 2y = 3$

21. $3x^2 + 7x + 2 = 0$

22. $\frac{x}{x + 1} = \frac{5}{7}$

23. $x^2 + 2x - 4 = 0$

24. $\frac{1}{x} + \frac{1}{3x} = 2$

25. $3x + y = 5$
 $x - y = 11$

26. $y = -\frac{3}{4}x + 4$
 $\frac{1}{4}x - y = 8$

27. $3x^2 = 8x$

28. $|x| = 4$

29. $\frac{2}{3}x + 1 = \frac{1}{2}x - 3$

30. $x^2 - 4x = 5$

31. $3x + 5y = 15$
(solve for y)

32. $(3x)^2 + x^2 = 15^2$

33. $y = 11$
 $y = 2x^2 + 3x - 9$

34. $(x + 2)(x + 3)(x - 4) = 0$

35. $|x + 6| = 8$

36. $2(x + 3) = y + 2$
 $y + 2 = 8x$

37. $2x + 3y = 13$
 $x - 2y = -11$

38. $2x^2 = -x + 7$

39. $1 - \frac{5}{6x} = \frac{x}{6}$

40. $\frac{x - 1}{5} = \frac{3}{x + 1}$

41. $\sqrt{2x + 1} = 5$

42. $2|2x - 1| + 3 = 7$

43. $\sqrt{3x - 1} + 1 = 7$

44. $(x + 3)^2 = 49$

45. $\frac{4x - 1}{x - 1} = x + 1$

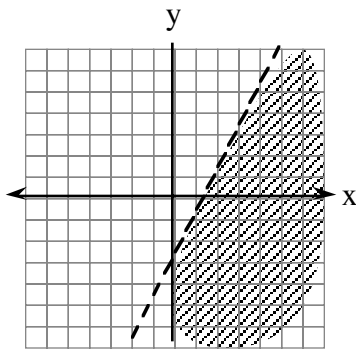
Solve these various types of inequalities.

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|------------------------|--------------------------------|---|
| 46. $4x - 2 \leq 6$ | 47. $4 - 3(x + 2) \geq 19$ | 48. $\frac{x}{2} > \frac{3}{7}$ |
| 49. $3(x + 2) \geq -9$ | 50. $-\frac{2}{3}x < 6$ | 51. $y < 2x - 3$ |
| 52. $ x > 4$ | 53. $x^2 - 6x + 8 \leq 0$ | 54. $ x + 3 > 5$ |
| 55. $2x^2 - 4x \geq 0$ | 56. $y \leq -\frac{2}{3}x + 2$ | 57. $y \leq -x + 2$
$y \leq 3x - 6$ |
| 58. $ 2x - 1 \leq 9$ | 59. $5 - 3(x - 1) \geq -x + 2$ | 60. $y \leq 4x + 16$
$y > -\frac{4}{3}x - 4$ |

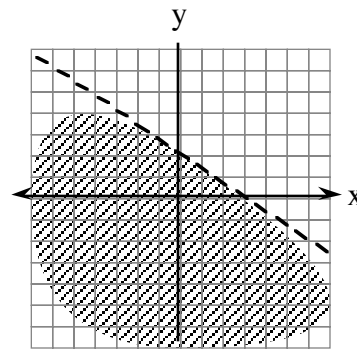
Answers

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|--------------------------------------|---------------------------------|----------------------------------|----------------------------|
| 1. 0 | 2. -8.5 | 3. $\frac{11}{3}$ | 4. $\frac{5}{2}$ |
| 5. (6, 9) | 6. $x = \frac{b}{a}$ | 7. $\frac{5}{2}, -3$ | 8. $\frac{7}{5}$ |
| 9. ± 12 | 10. $\frac{16}{5}$ | 11. $\frac{25}{13}$ | 12. $y = \frac{2}{3}x + 3$ |
| 13. -2, -3 | 14. (± 10 , 100) | 15. (-6, -13) | 16. 0, 4 |
| 17. ± 2 | 18. $\frac{12}{5}$ | 19. -1, -6 | 20. (-1, 2) |
| 21. $-\frac{1}{3}, -2$ | 22. $\frac{5}{2}$ | 23. $\frac{-2 \pm \sqrt{20}}{2}$ | 24. $\frac{2}{3}$ |
| 25. (4, -7) | 26. (12, -5) | 27. $0, \frac{8}{3}$ | 28. ± 4 |
| 29. -24 | 30. 5, -1 | 31. $y = -\frac{3}{5}x + 3$ | 32. $\approx \pm 4.74$ |
| 33. (-4, 11) and $(\frac{5}{2}, 11)$ | 34. -2, -3, 4 | 35. 2, -14 | 36. (1, 6) |
| 37. (-1, 5) | 38. $\frac{1 \pm \sqrt{57}}{4}$ | 39. 1, 5 | 40. ± 4 |
| 41. 12 | 42. $\frac{3}{2}, -\frac{1}{2}$ | 43. $\frac{37}{3}$ | 44. 4, -10 |
| 45. 0, 4 | 46. $x \leq 2$ | 47. $x \leq -7$ | 48. $x > \frac{6}{7}$ |
| 49. $x \geq -5$ | 50. $x > -9$ | 51. below | 52. $x > 4, x < -4$ |
| 53. $2 \leq x \leq 4$ | 54. $x > 2$ or $x < -8$ | 55. $x \leq 0$ or $x \geq 2$ | 56. below |
| 57. below | 58. $-4 \leq x \leq 5$ | 59. $x \leq 3$ | 60. below |

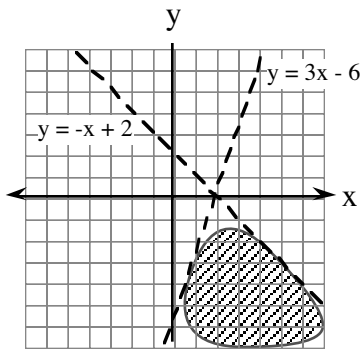
51.



56.



57.



60.

