

6.2 Exercises

Use the quadratic formula to find the real number solutions of each of the following equations. See Examples 1 and 2.

1. $m^2 + 8m + 15 = 0$
2. $x^2 + 4x - 5 = 0$
3. $4x^2 - 8x + 1 = 0$
4. $m^2 + 2m - 5 = 0$
5. $2x^2 + 4x + 1 = 0$
6. $2z^2 + 3z - 1 = 0$
7. $m^2 + 18 = 10m$
8. $p^2 + 6p + 4 = 0$
9. $2y^2 = 2y + 1$
10. $9r^2 + 6r = 1$
11. $q^2 - 1 = q$
12. $2p^2 - 4p = 5$
13. $5m^2 + 8m + 2 = 0$
14. $3r^2 - r - 1 = 0$
15. $5r^2 - 2r - 1 = 0$
16. $5q^2 - 2q - 2 = 0$
17. $4r^2 - 3r = 5$
18. $6t^2 = 7 - 19t$
19. $p^2 + \frac{p}{3} = \frac{2}{3}$
20. $\frac{x^2}{4} - \frac{x}{2} = 1$
21. $4k(k + 1) = 1$
22. $(r - 1)(4r) = 19$
23. $(g + 2)(g - 3) = 1$
24. $(y - 5)(y + 2) = 6$
25. $3x^2 + 2x = 2$
26. $26r - 2 = 3r^2$
27. $y = \frac{5(5 - y)}{3(y + 1)}$
28. $k = \frac{k - 15}{3(k - 1)}$

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1. $\{-5, -3\}$ 3. $\left\{\frac{2 + \sqrt{3}}{2}, \frac{2 - \sqrt{3}}{2}\right\}$ 5. $\left\{\frac{-2 + \sqrt{2}}{2}, \frac{-2 - \sqrt{2}}{2}\right\}$
7. $\{5 + \sqrt{7}, 5 - \sqrt{7}\}$ 9. $\left\{\frac{1 + \sqrt{3}}{2}, \frac{1 - \sqrt{3}}{2}\right\}$ 11. $\left\{\frac{1 + \sqrt{5}}{2}, \frac{1 - \sqrt{5}}{2}\right\}$
13. $\left\{\frac{-4 + \sqrt{6}}{5}, \frac{-4 - \sqrt{6}}{5}\right\}$ 15. $\left\{\frac{1 + \sqrt{6}}{5}, \frac{1 - \sqrt{6}}{5}\right\}$ 17. $\left\{\frac{3 + \sqrt{89}}{8}, \frac{3 - \sqrt{89}}{8}\right\}$
19. $\{-1, 2/3\}$ 21. $\left\{\frac{-1 + \sqrt{2}}{2}, \frac{-1 - \sqrt{2}}{2}\right\}$ 23. $\left\{\frac{1 + \sqrt{29}}{2}, \frac{1 - \sqrt{29}}{2}\right\}$
25. $\left\{\frac{-1 + \sqrt{7}}{3}, \frac{-1 - \sqrt{7}}{3}\right\}$ 27. $\left\{\frac{-4 + \sqrt{91}}{3}, \frac{-4 - \sqrt{91}}{3}\right\}$ 29. $\left\{-\frac{2}{3} + \frac{\sqrt{2}}{3}i, -\frac{2}{3} - \frac{\sqrt{2}}{3}i\right\}$
31. $\{3 + i\sqrt{5}, 3 - i\sqrt{5}\}$ 33. $\left\{\frac{1}{2} + \frac{\sqrt{6}}{2}i, \frac{1}{2} - \frac{\sqrt{6}}{2}i\right\}$ 35. $\left\{-\frac{1}{2} + \frac{\sqrt{3}}{2}i, -\frac{1}{2} - \frac{\sqrt{3}}{2}i\right\}$
37. $\left\{\frac{1}{6} + \frac{\sqrt{47}}{6}i, \frac{1}{6} - \frac{\sqrt{47}}{6}i\right\}$ 39. $\{0, 4i/3\}$ 41. $\{-2i, i/2\}$ 43. $\{-.275, 7.275\}$
45. $\{-1.212, 3.712\}$ 47. $\{-2.165, .594\}$ 49. Bezzone, approximately 13.1 hours; Nicolai, approximately 15.1 hours
51. Johnson, 4 hours; Toms, 8 hours 53. Dick, 23.0 hours; Tom, 25.0 hours
55. $\{-2\sqrt{2}, \sqrt{2}\}$ 57. $\left\{\frac{-4\sqrt{5}}{5}, \frac{\sqrt{5}}{2}\right\}$ 59. $\{-i, 2i\}$ 61. 52; 1/2; -3/4
63. $17; \frac{5\sqrt{2}}{2}; 1$ 65. 3 67. 1/4