

Solve each equation by completing the square. The roots are integers.

1. $x^2 + 4x = 5$

2. $x^2 - 2x = 8$

3. $x^2 - 10x = -25$

4. $x^2 + 2x = 15$

5. $x^2 - 10x = 24$

6. $x^2 + 4x = 32$

Solve each equation by completing the square. Express square roots in simplest form.

7. $x^2 - 2x = 1$

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

9. $x^2 - 4x = -1$

10. $2x^2 - 4x = 8$

11. $x^2 + 4x = -1$

12. $3x^2 - 12x = 3$

13. $3x^2 - 6x = 21$

14. $3x^2 - 12x = 69$

15. $5x^2 - 50x = -85$

Solve.

16. A rectangular deck has an area of 320 ft^2 . The length of the deck is 4 feet longer than the width. Find the dimensions of the deck. Solve by completing the square.
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1. $x = -5$ or $x = 1$
2. $x = -2$ or $x = 4$
3. $x = 5$
4. $x = -5$ or $x = 3$
5. $x = 12$ or $x = -2$
6. $x = -8$ or $x = 4$
7. $x = 1 + \sqrt{2}$ or $x = 1 - \sqrt{2}$
8. $x = 3 + \sqrt{3}$ or $x = 3 - \sqrt{3}$
9. $x = 2 + \sqrt{3}$ or $x = 2 - \sqrt{3}$
10. $x = 1 + \sqrt{5}$ or $x = 1 - \sqrt{5}$
11. $x = -2 + \sqrt{3}$ or $x = -2 - \sqrt{3}$
12. $x = 2 + \sqrt{5}$ or $x = 2 - \sqrt{5}$
13. $x = 1 + 2\sqrt{2}$ or $x = 1 - 2\sqrt{2}$
14. $x = 2 + 3\sqrt{3}$ or $x = 2 - 3\sqrt{3}$
15. $x = 5 + 2\sqrt{2}$ or $x = 5 - 2\sqrt{2}$
16. The width is 16 feet and the length is 20 feet.

Solve. If the equation has no solution, give that as your answer.

1. $x^2 - 25 = 0$

2. $x^2 + 25 = 0$

3. $6x^2 - 6 = 0$

4. $-3x^2 + 27 = 0$

5. $-2x^2 - 1 = 0$

6. $4x^2 - 100 = -100$

7. $x^2 - 121 = 0$

8. $x^2 - 49 = 0$

9. $x^2 - 16 = 20$

10. $(x + 5)^2 - 6 = 43$

11. $(x - 1)^2 - 19 = 81$

12. $(x - 14)^2 + 13 = 14$

13. $2(x - 3)^2 + 1 = 73$

14. $(x - 1)^2 + 15 = 14$

15. $-2(x + 1)^2 - 5 = -55$

Solve. Express square roots in simplest form.

16. $2(x + 1)^2 - 1 = 9$

17. $2(x - 3)^2 + 7 = 19$

18. $5(x - 7)^2 + 10 = 25$

1. $x = -5$ or $x = 5$
2. no solution
3. $x = -1$ or $x = 1$
4. $x = -3$ or $x = 3$
5. no solution
6. $x = 0$
7. $x = 11$ or $x = -11$
8. $x = 7$ or $x = -7$
9. $x = 6$ or $x = -6$
10. $x = -12$ or $x = 2$
11. $x = 11$ or $x = -9$
12. $x = 15$ or $x = 13$
13. $x = -3$ or $x = 9$
14. no solution
15. $x = -6$ or $x = 4$
16. $x = -1 \pm \sqrt{5}$
17. $x = 3 \pm \sqrt{6}$
18. $x = 7 \pm \sqrt{3}$

Solve using the quadratic formula.

1. $x^2 + x = 12$

2. $4x^2 - 17x - 15 = 0$

3. $2x^2 - 5x = 3$

4. $3x^2 + 11x + 5 = 0$

5. $x^2 - 11x + 28 = 0$

6. $x^2 - 49 = 0$

7. $6x^2 + x - 1 = 0$

8. $x^2 + 8x - 20 = 0$

Find the number of real solutions of each equation using the discriminant.

9. $x^2 + 25 = 0$

10. $3x^2 - x\sqrt{7} - 3 = 0$

11. $x^2 + 8x + 16 = 0$

Practice and Problem Solving: A/B

1. 3 and -4

2. 5 and $-\frac{3}{4}$

3. 3 and $-\frac{1}{2}$

4. $\frac{-11+\sqrt{61}}{6}$ and $\frac{-11-\sqrt{61}}{6}$

5. 7 and 4

6. 7 and -7

7. $\frac{1}{3}$ and $-\frac{1}{2}$

8. 2 and -10

9. $0^2 - 4(1)(25) < 0$, no real solution

10. $(\sqrt{7})^2 - 4(3)(-3) > 0$, two real solutions

11. $(8)^2 - 4(1)(16) = 0$, one real solution