

Solving Quadratics Hierarchy

Hierarchy

1) $Ax^2 + Bx + C = 0$

Method #1

2) Graphing

Method #2

3) Take Square Root of Both Sides.

When to use

Solve each equation by taking the square root of each side.

4) $r^2 = 51$

5) $6n^2 + 10 = 16$

Method #3

6) Factoring.

When to use:

Zero Product Property

Solve each equation by factoring.

7) $(b + 6)(b + 3) = 0$

8) $-v^2 + 3v + 4 = 0$

$$9) 4x^2 + 40x + 59 = -5$$

$$10) 7n^3 - 61n^2 = -40n$$

Method #4

11) Completing the square.

When best to use:

Solve each equation by completing the square.

$$12) x^2 = -21 + 18x$$

$$13) -p^2 - 6p = -11$$

$$14) b^2 = -4b + 73$$

$$15) n^2 - 16n = 12$$

Method #5

16) Quadratic Formula.

When best to use:

Solve each equation with the quadratic formula.

$$17) 4x^2 + 3x = 45$$

$$18) -8r^2 + 23 = 7r$$

$$19) 10a^2 = 21$$

$$20) 12a^2 + 2 = 0$$

Solve each equation by the method of your choice. All answers should be exact and simplified.

21) $6b^2 + 252 = -78b$

22) $v^2 = 1$

23) $2x = 4x^2 - 22$

24) $n^2 + 18n - 61 = 7$

25) $x^2 - 14 = 5x$

26) $0 = -3x^2 - 48 - 24x$

27) $n^2 - 10 = -20$

28) $x^2 = 35 + 12x$

29) $n^2 + 9n + 13 = -7$

30) $8r^2 + 12r = 21$

$$31) -29a + 8 = -6a^2 + 7a + 8$$

$$32) -5 + 100x^2 = -4$$

$$33) -5n^2 + 9n - 32 = n - 6n^2$$

$$34) 7a^2 - 22 = -2 - 23a$$

$$35) -4p^2 + 7 = 9$$

$$36) 5n^2 = 47n - 56$$

$$37) 36b^2 + 6 = 106$$

$$38) 9k^2 - 45 = 18k$$

$$39) 3b^2 - 21 = 2b$$

$$40) -7n^2 - 3n + 17 = 8$$

Answers to Solving Quadratics Hierarchy

- | | | | |
|---|--|---|--------------------------------------|
| 1) 0 | 2) 2 | 3) 0 | 4) $\{\sqrt{51}, -\sqrt{51}\}$ |
| 5) $\{1, -1\}$ | 6) 0 | 7) $\{-6, -3\}$ | 8) $\{4, -1\}$ |
| 9) $\{-8, -2\}$ | 10) $\{0, \frac{5}{7}, 8\}$ | 11) 0 | |
| 12) $\{9 + 2\sqrt{15}, 9 - 2\sqrt{15}\}$ | 13) $\{-3 + 2\sqrt{5}, -3 - 2\sqrt{5}\}$ | 14) $\{-2 + \sqrt{77}, -2 - \sqrt{77}\}$ | |
| 15) $\{8 + 2\sqrt{19}, 8 - 2\sqrt{19}\}$ | 16) 0 | 17) $\{3, -\frac{15}{4}\}$ | |
| 18) $\left\{\frac{-7 - \sqrt{785}}{16}, \frac{-7 + \sqrt{785}}{16}\right\}$ | 19) $\left\{\frac{\sqrt{210}}{10}, -\frac{\sqrt{210}}{10}\right\}$ | 20) No solution. | |
| 21) $\{-7, -6\}$ | 22) $\{1, -1\}$ | 23) $\left\{\frac{1 - \sqrt{89}}{4}, \frac{1 + \sqrt{89}}{4}\right\}$ | |
| 24) $\{-9 + \sqrt{149}, -9 - \sqrt{149}\}$ | 25) $\{-2, 7\}$ | 26) $\{-4\}$ | |
| 27) No solution. | 28) $\{6 + \sqrt{71}, 6 - \sqrt{71}\}$ | 29) $\{-5, -4\}$ | |
| 30) $\left\{\frac{-3 + \sqrt{51}}{4}, \frac{-3 - \sqrt{51}}{4}\right\}$ | 31) $\{6, 0\}$ | 32) $\left\{\frac{1}{10}, -\frac{1}{10}\right\}$ | |
| 33) $\{-4 + 4\sqrt{3}, -4 - 4\sqrt{3}\}$ | 34) $\left\{\frac{5}{7}, -4\right\}$ | 35) No solution. | |
| 36) $\left\{\frac{7}{5}, 8\right\}$ | 37) $\left\{\frac{5}{3}, -\frac{5}{3}\right\}$ | 38) $\{1 + \sqrt{6}, 1 - \sqrt{6}\}$ | 39) $\left\{-\frac{7}{3}, 3\right\}$ |
| 40) $\left\{\frac{-3 - 3\sqrt{29}}{14}, \frac{-3 + 3\sqrt{29}}{14}\right\}$ | | | |