

## Solving Quadratic Equations By Factoring

Solve each equation by factoring.

1)  $(3n - 2)(4n + 1) = 0$

2)  $m(m - 3) = 0$

3)  $(5n - 1)(n + 1) = 0$

4)  $(n + 2)(2n + 5) = 0$

5)  $3k^2 + 72 = 33k$

6)  $n^2 = -18 - 9n$

7)  $7v^2 - 42 = -35v$

8)  $k^2 = -4k - 4$

9)  $-2v^2 - v + 12 = -3v^2 + 6v$

10)  $-4n^2 + 6n - 16 = -5n^2$

$$11) 8r^2 + 3r + 2 = 7r^2$$

$$12) b^2 + b = 2$$

$$13) 10n^2 - 35 = 65n$$

$$14) 3x^2 - 8x = 16$$

$$15) 16n^2 - 114n = -14$$

$$16) 28n^2 = -96 - 184n$$

$$17) 7a^2 + 32 = 7 - 40a$$

$$18) 42x^2 - 69x + 20 = 7x^2 - 8$$

**Critical thinking questions. True/False.**

19) If a quadratic equation can be factored and each factor contains only real numbers then there cannot be an imaginary solution.

20) If a quadratic equation cannot be factored then it will have at least one imaginary solution.

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Solve each equation by factoring.

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$$\left\{ \frac{2}{3}, -\frac{1}{4} \right\}$$

2)  $m(m - 3) = 0$

$$\{3, 0\}$$

3)  $(5n - 1)(n + 1) = 0$

$$\left\{ \frac{1}{5}, -1 \right\}$$

4)  $(n + 2)(2n + 5) = 0$

$$\left\{ -2, -\frac{5}{2} \right\}$$

5)  $3k^2 + 72 = 33k$

$$\{3, 8\}$$

6)  $n^2 = -18 - 9n$

$$\{-6, -3\}$$

7)  $7v^2 - 42 = -35v$

$$\{-6, 1\}$$

8)  $k^2 = -4k - 4$

$$\{-2\}$$

9)  $-2v^2 - v + 12 = -3v^2 + 6v$

$$\{3, 4\}$$

10)  $-4n^2 + 6n - 16 = -5n^2$

$$\{2, -8\}$$

11)  $8r^2 + 3r + 2 = 7r^2$

$\{-2, -1\}$

12)  $b^2 + b = 2$

$\{-2, 1\}$

13)  $10n^2 - 35 = 65n$

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$\{-\frac{4}{3}, 4\}$

15)  $16n^2 - 114n = -14$

$\{\frac{1}{8}, 7\}$

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$\{-\frac{4}{7}, -6\}$

17)  $7a^2 + 32 = 7 - 40a$

$\{-\frac{5}{7}, -5\}$

18)  $42x^2 - 69x + 20 = 7x^2 - 8$

$\{\frac{7}{5}, \frac{4}{7}\}$

**Critical thinking questions. True/False.**

19) If a quadratic equation can be factored and each factor contains only real numbers then there cannot be an imaginary solution.

True

20) If a quadratic equation cannot be factored then it will have at least one imaginary solution.

False (Example,  $x^2 = 10$ )