

Solving Equations by Completing the Square

Solve each equation by completing the square.

1) $a^2 + 2a - 3 = 0$

2) $a^2 - 2a - 8 = 0$

3) $p^2 + 16p - 22 = 0$

4) $k^2 + 8k + 12 = 0$

5) $r^2 + 2r - 33 = 0$

6) $a^2 - 2a - 48 = 0$

7) $m^2 - 12m + 26 = 0$

8) $x^2 + 12x + 20 = 0$

9) $k^2 - 8k - 48 = 0$

10) $p^2 + 2p - 63 = 0$

11) $m^2 + 2m - 48 = -6$

12) $p^2 - 8p + 21 = 6$

$$13) m^2 + 10m + 14 = -7$$

$$14) v^2 - 2v = 3$$

$$15) 5v^2 - 21 = 10v$$

$$16) 4v^2 + 16v = 65$$

$$17) 7b^2 - 14b - 56 = 0$$

$$18) 2n^2 + 12n + 10 = 0$$

$$19) n^2 + 13n + 22 = 7$$

$$20) 5n^2 + 19n - 68 = -2$$

$$21) r^2 - 9r - 38 = -9$$

$$22) 3x^2 + 20x + 36 = 4$$

$$23) x^2 + 7x - 45 = 7$$

$$24) n^2 + 19n + 66 = 6$$

Solving Equations by Completing the Square

Solve each equation by completing the square.

1) $a^2 + 2a - 3 = 0$

$\{1, -3\}$

2) $a^2 - 2a - 8 = 0$

$\{4, -2\}$

3) $p^2 + 16p - 22 = 0$

$\{-17.274, 1.274\}$

$\{-8 + \sqrt{86}, -8 - \sqrt{86}\}$

4) $k^2 + 8k + 12 = 0$

$\{-2, -6\}$

5) $r^2 + 2r - 33 = 0$

$\{-6.831, 4.831\}$

$\{-1 + \sqrt{34}, -1 - \sqrt{34}\}$

6) $a^2 - 2a - 48 = 0$

$\{8, -6\}$

7) $m^2 - 12m + 26 = 0$

$\{2.838, 9.162\}$

$\{6 + \sqrt{10}, 6 - \sqrt{10}\}$

8) $x^2 + 12x + 20 = 0$

$\{-2, -10\}$

9) $k^2 - 8k - 48 = 0$

$\{12, -4\}$

10) $p^2 + 2p - 63 = 0$

$\{7, -9\}$

11) $m^2 + 2m - 48 = -6$

$\{5.557, -7.557\}$

$\{-1 + \sqrt{43}, -1 - \sqrt{43}\}$

12) $p^2 - 8p + 21 = 6$

$\{5, 3\}$

13) $m^2 + 10m + 14 = -7$

$\{-3, -7\}$

14) $v^2 - 2v = 3$

$\{3, -1\}$

15) $5v^2 - 21 = 10v$

$\{3.28, -1.28\}$

$\left\{1 + \frac{\sqrt{130}}{5}, 1 - \frac{\sqrt{130}}{5}\right\}$

16) $4v^2 + 16v = 65$

$\{2.5, -6.5\}$

17) $7b^2 - 14b - 56 = 0$

$\{4, -2\}$

18) $2n^2 + 12n + 10 = 0$

$\{-1, -5\}$

19) $n^2 + 13n + 22 = 7$

$\{-1.280, -11.720\}$

$\left\{-\frac{13}{2} + \frac{\sqrt{109}}{2}, -\frac{13}{2} - \frac{\sqrt{109}}{2}\right\}$

20) $5n^2 + 19n - 68 = -2$

$\{2.2, -6\}$

21) $r^2 - 9r - 38 = -9$

$\{-2.518, 11.518\}$

$\left\{\frac{9}{2} + \frac{\sqrt{197}}{2}, \frac{9}{2} - \frac{\sqrt{197}}{2}\right\}$

22) $3x^2 + 20x + 36 = 4$

$\{-4, -2.667\}$

$\left\{-4, -\frac{8}{3}\right\}$

23) $x^2 + 7x - 45 = 7$

$\{-11.516, 4.516\}$

$\left\{-\frac{7}{2} + \frac{\sqrt{257}}{2}, -\frac{7}{2} - \frac{\sqrt{257}}{2}\right\}$

24) $n^2 + 19n + 66 = 6$

$\{-4, -15\}$