The method: Completing the square

Move the number over, add (b ÷ 2)² to both sides, write a square, take the square root.

$x^2 - 10x + 21 = 0$

$x^2 - 10x = -21$ move the number to the other side

$x^2 - 10x + 25 = -21 + 25$ add $(-10 \div 2)^2 = 25$ to both sides

$(x - 5)^2 = 4$ write the left side as a square

$x - 5 = \pm 2$ take the square root of both sides

$x = 3$ or $x = 7$

$x^2 - 6x - 5 = 0$

$x^2 - 6x = 5$ move the number to the other side

$x^2 - 6x + 9 = 5 + 9$ add $(-6 \div 2)^2 = 9$ to both sides

$(x - 3)^2 = 14$ write the left side as a square

$x - 3 = \pm \sqrt{14}$ take the square root of both sides

$x = 3 \pm \sqrt{14}$

Problems 1 and 2 worked out · Version 0A

$x^2 + 2x = 0$

$x^2 + 2x + 1 = 0 + 1$ add $(2 \div 2)^2 = 1$ to both sides

$(x + 1)^2 = 1$ write the left side as a square

$x + 1 = \pm 1$ take the square root of both sides

$x = -2$ or $x = 0$

$x^2 + 2x - 2 = 0$

$x^2 + 2x = 2$ move the number to the other side

$x^2 + 2x + 1 = 2 + 1$ add $(2 \div 2)^2 = 1$ to both sides

$(x + 1)^2 = 3$ write the left side as a square

$x + 1 = \pm \sqrt{3}$ take the square root of both sides

$x = -1 \pm \sqrt{3}$

Completing the square · Version 0A

1) $x = -2$ or $x = 0$ 2) $x = -1 \pm \sqrt{3}$

3) $x = -1 \pm \sqrt{29}$ 4) $x = 5$ or $x = 7$

5) $x = -5 \pm \sqrt{15}$ 6) $x = -4$ or $x = 0$

7) $x = -2 \pm 2\sqrt{6}$ 8) $x = -8$ or $x = 0$