

Solving quadratic equations

Use the quadratic equation to solve the following equations – leave as a SURD where necessary

Where a solution does not exist – write “No real solutions”

Part 1:

$x^2 + 5x + 6 = 0$	$x^2 + 7x + 12 = 0$	$x^2 + 8x + 12 = 0$
$x^2 + 7x + 8 = 0$	$x^2 + 7x + 7 = 0$	$x^2 + 1x + 5 = 0$

Part 2:

$x^2 + 3x - 15 = 0$	$x^2 + 4x - 12 = 0$	$x^2 + 3x - 10 = 0$
$x^2 - 2x - 35 = 0$	$x^2 + x - 20 = 0$	$x^2 - 6x - 16 = 0$

Part 3:

$x^2 + 3x + 10 = 0$	$x^2 - 10x + 3 = 0$	$x^2 - 5x + 6 = 0$
$x^2 - 7x + 12 = 0$	$5 + 4x + x^2 = 0$	$7x - 3 - x^2 = 0$

Use the quadratic equation to solve the following equations – leave as a SURD where necessary

Where a solution does not exist – write “No real solutions”

Part 1:

$x^2 + 5x + 6 = 0$	$x^2 + 7x + 12 = 0$	$x^2 + 8x + 12 = 0$
$x^2 + 7x + 8 = 0$	$x^2 + 7x + 7 = 0$	$x^2 + 1x + 5 = 0$

Part 2:

$x^2 + 3x - 15 = 0$	$x^2 + 4x - 12 = 0$	$x^2 + 3x - 10 = 0$
$x^2 - 2x - 35 = 0$	$x^2 + x - 20 = 0$	$x^2 - 6x - 16 = 0$

Part 3:

$x^2 + 3x + 10 = 0$	$x^2 - 10x + 3 = 0$	$x^2 - 5x + 6 = 0$
$x^2 - 7x + 12 = 0$	$5 + 4x + x^2 = 0$	$7x - 3 - x^2 = 0$

Extending the Quadratic Formula – where the coefficient of $x^2 \neq 1$

Where a solution does not exist – write “No real solutions”

Part 1:

$3x^2 + 4x + 1 = 0$	$5x^2 + 6x + 1 = 0$	$6x^2 + 5x + 2 = 0$
$7x^2 + 10x + 2 = 0$	$2x^2 + 11x + 3 = 0$	$3x^2 + x + 4 = 0$

Part 2:

$5x^2 - 4x - 1 = 0$	$7x^2 - 6x - 1 = 0$	$4x^2 - 4x + 1 = 0$
$2x^2 + 10x + 1 = 0$	$3x^2 - 2x - 8 = 0$	$7x^2 - 3x + 4 = 0$

Make up your own 5 equations and try to solve them.

Extending the Quadratic Formula – where the coefficient of $x^2 \neq 1$

Where a solution does not exist – write “No real solutions”

Part 1:

$3x^2 + 4x + 1 = 0$	$5x^2 + 6x + 1 = 0$	$6x^2 + 5x + 2 = 0$
$7x^2 + 10x + 2 = 0$	$2x^2 + 11x + 3 = 0$	$3x^2 + x + 4 = 0$

Part 2:

$5x^2 - 4x - 1 = 0$	$7x^2 - 6x - 1 = 0$	$4x^2 - 4x + 1 = 0$
$2x^2 + 10x + 1 = 0$	$3x^2 - 2x - 8 = 0$	$7x^2 - 3x + 4 = 0$

Make up your own 5 equations and try to solve them.

Extending the Quadratic Formula – where the coefficient of $x^2 \neq 1$

Where a solution does not exist – write “No real solutions”

Part 1:

$3x^2 + 4x + 1 = 0$	$5x^2 + 6x + 1 = 0$	$6x^2 + 5x + 2 = 0$
$7x^2 + 10x + 2 = 0$	$2x^2 + 11x + 3 = 0$	$3x^2 + x + 4 = 0$

Part 2:

$5x^2 - 4x - 1 = 0$	$7x^2 - 6x - 1 = 0$	$4x^2 - 4x + 1 = 0$
$2x^2 + 10x + 1 = 0$	$3x^2 - 2x - 8 = 0$	$7x^2 - 3x + 4 = 0$

Make up your own 5 equations and try to solve them.

Solving quadratic equations which require an initial re-arrangement

Part 1:

$x^2 + 5x + 12 = 10$	$x^2 + 5x + 1 = x$	$x^2 + 5x + 2 = 7 - 2x$
$3x^2 + 2x + 3 = 5x + 4$	$7x^2 = 4x + 2$	$(2x + 3)^2 = 12$
$4x^2 + 7x + 2 = 2x^2 + x - 5$	$3x^2 + 7x + 2 = 5x^2 + 2x$	$4 + 2x = 3x^2$

Part 2:

$\frac{1}{2}(x^2 + 3x + 2) = 8$	$\frac{1}{2}(x^2 + 3x + 2) = 4x^2 + 2x$
$\frac{1}{2}(x^2 + 4x + 7x + 3) \times 6 = x^2 + 5$	$(2x - 5)^2 = \frac{1}{2}(x + 3)(x + 4)$

Solving quadratic equations which require an initial re-arrangement

Part 1:

$x^2 + 5x + 12 = 10$	$x^2 + 5x + 1 = x$	$x^2 + 5x + 2 = 7 - 2x$
$3x^2 + 2x + 3 = 5x + 4$	$7x^2 = 4x + 2$	$(2x + 3)^2 = 12$
$4x^2 + 7x + 2 = 2x^2 + x - 5$	$3x^2 + 7x + 2 = 5x^2 + 2x$	$4 + 2x = 3x^2$

Part 2:

$\frac{1}{2}(x^2 + 3x + 2) = 8$	$\frac{1}{2}(x^2 + 3x + 2) = 4x^2 + 2x$
$\frac{1}{2}(x^2 + 4x + 7x + 3) \times 6 = x^2 + 5$	$(2x - 5)^2 = \frac{1}{2}(x + 3)(x + 4)$