

The Quadratic Formula

ANSWERS 

1

Solve $x^2 + 5x + 3 = 0$
Give your answers to 2 decimal places.

$$a = 1 \quad b = 5 \quad c = 3$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times 3}}{2 \times 1}$$

$$x = -0.70 \text{ or } -4.30$$

2

Solve $x^2 + 6x + 2 = 0$
Give your answers to 2 decimal places.

$$a = 1 \quad b = 6 \quad c = 2$$

$$x = \frac{-6 \pm \sqrt{6^2 - 4 \times 1 \times 2}}{2 \times 1}$$

$$x = -0.35 \text{ or } -5.65$$

3

Solve $x^2 + 4x - 3 = 0$
Give your answers to 2 decimal places.

$$a = 1 \quad b = 4 \quad c = -3$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4 \times 1 \times (-3)}}{2 \times 1}$$

$$x = 0.65 \text{ or } -4.65$$

4

Solve $2x^2 + 7x + 4 = 0$
Give your answers to 2 decimal places.

$$a = 2 \quad b = 7 \quad c = 4$$

$$x = \frac{-7 \pm \sqrt{7^2 - 4 \times 2 \times 4}}{2 \times 2}$$

$$x = -0.72 \text{ or } -2.78$$

5

Solve $3x^2 - 5x - 1 = 0$
Give your answers to 2 decimal places.

$$a = 3 \quad b = -5 \quad c = -1$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \times 3 \times (-1)}}{2 \times 3}$$

$$x = 1.85 \text{ or } -0.18$$

6

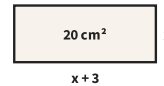
Solve $2x^2 = 3x + 7$
Give your answers to 2 decimal places.

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4 \times 2 \times (-7)}}{2 \times 2}$$

$$x = 2.77 \text{ or } -1.27$$

7

A rectangle is x cm wide and $(x + 3)$ cm long. Its area is 20 cm^2 . Find x to 2 decimal places.



$$x^2 + 3x - 20 = 0$$

$$x = 3.22$$

8

How many solutions does $x^2 + 4x + 5 = 0$ have?
Work out $b^2 - 4ac$ to decide.

$$b^2 - 4ac = -4$$

Answer None

The Quadratic Formula *further practice*

ANSWERS 

9

Solve $x(x + 4) = 7$
Give your answers to 2 decimal places.

$$x^2 + 4x - 7 = 0, \text{ so } x = \frac{-4 \pm \sqrt{16 + 28}}{2}$$

Answer $x = 1.32 \text{ or } -5.32$

10

Solve $x^2 - 6x + 4 = 0$
Give your answers in surd form, as simply as you can.

$$\sqrt{20} = 2\sqrt{5}, \text{ so } x = \frac{6 \pm 2\sqrt{5}}{2}$$

Answer $x = 3 \pm \sqrt{5}$

11

Solve $\frac{2}{x} = x + 3$
Give your answers to 2 decimal places.

$$2 = x^2 + 3x, \text{ so } x^2 + 3x - 2 = 0$$

Answer $x = 0.56 \text{ or } -3.56$

12

$x^2 + 6x + k = 0$ has exactly one solution. Find the value of k .

$$6^2 - 4 \times 1 \times k = 0, \text{ so } 36 = 4k$$

Answer $k = 9$

13

A diver jumps from a board. Her height above the water after t seconds is $h = 3 + 4t - 5t^2$ metres. After how long does she reach the water? Give your answer to 2 decimal places.

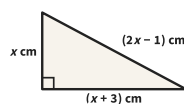
$$5t^2 - 4t - 3 = 0, t = \frac{4 \pm \sqrt{16 + 60}}{10}$$

1.27 or -0.47: time cannot be negative

Answer 1.27 s

14

This triangle is right-angled. Find x to 2 decimal places.



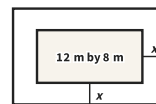
$$x^2 + (x + 3)^2 = (2x - 1)^2$$

$$x^2 - 5x - 4 = 0$$

Answer $x = 5.70$

15

A pool is 12 m by 8 m. A tiled edge of width x m goes all the way round it. The pool and the edge cover 150 m^2 in total. Find x to 2 decimal places.



$$(12 + 2x)(8 + 2x) = 150$$

$$4x^2 + 40x - 54 = 0$$

Answer $x = 1.20$

16

Ali solves $2x^2 - 3x - 4 = 0$. He writes $x = \frac{3 \pm \sqrt{9 - 32}}{4}$ and says there are no solutions. Explain his mistake, then solve the equation to 2 decimal places.

$$c = -4, \text{ so } -4ac = +32$$

$$x = \frac{3 \pm \sqrt{41}}{4}$$

Answer $x = 2.35 \text{ or } -0.85$