

## The Quadratic Formula



## REVISE THIS TOPIC

1 Solve 
$$3x^2 + 6x + 2 = 0$$

$$a=3 b=6 c=2$$

Give your answers correct to 2 decimal places.

[3 marks]

$$x = \frac{-6 \pm \sqrt{6^2 - 4 \times 3 \times 2}}{6}$$

$$x = -6 \pm \sqrt{12}$$

$$\chi = -6 + \sqrt{12}$$

$$x = \frac{-6 - 112}{6}$$

Answer 
$$x = -0.42$$
  $x = -1.58$ 

$$\infty = -1.58$$

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

$$a=5$$
  $b=2$   $c=-4$ 

Give your answers correct to 3 significant figures.

[3 marks]

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

$$x = -2 \pm \sqrt{84}$$

$$\infty = -2 + \sqrt{84}$$

$$x = -2 - \sqrt{84}$$



Answer 
$$x = 0.717$$
  $x = -1.12$ 

$$x = -(.12)$$



[3 marks]

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

$$x = \frac{-2 + \sqrt{52}}{4}$$

$$x = -2 \pm \sqrt{52}$$

$$x = -2 - \sqrt{52}$$

$$4$$

Answer 
$$x = 1.30$$
  $x = -2.30$ 

$$x = \frac{3 \pm \sqrt{(-3)^2 - 4 \times 6 \times - 4}}{12}$$

$$x = \frac{3 \pm \sqrt{(-3)^2 - 4 \times 6 \times - 4}}{12}$$

$$x = \frac{3 + \sqrt{105}}{12}$$

$$x = \frac{3 \pm \sqrt{105}}{12}$$

$$x = \frac{3 - \sqrt{105}}{12}$$

Answer 
$$x = |\cdot|0$$
  $x = -0.604$ 

5 Solve  $3x^2 - 6x - 1 = 0$  a = 3 b = -6 c = -1

Give your answers correct to 3 significant figures.

[3 marks]

$$x = 6 \pm \sqrt{(-6)^2 - 4 \times 3 \times -1}$$

$$6 \qquad x = 6 + \sqrt{48}$$

$$x = 6 \pm \sqrt{48}$$

$$6$$

$$x = 6 - \sqrt{48}$$

$$6$$

Answer 
$$\infty = 2.15$$
  $\infty = -0.155$ 





b=2 c=4 a=-36 Solve  $2x + 4 - 3x^2 = 0$ 

Give your answers correct to 3 decimal places.

[3 marks]

$$x = -2 \pm \sqrt{2^2 - 4x - 3x + 4}$$

$$x = \frac{-2 + \sqrt{52}}{-6}$$

$$x = \frac{-2 \pm \sqrt{52}}{-6}$$

$$x = \frac{-2 - \sqrt{52}}{-6}$$

Answer 
$$x = -0.869$$
  $x = 1.535$ 

Solve  $4x^2 + 5x - 2 = 6x$ 

$$\alpha = 4 b = -1 c = -2$$

Give your answers correct to 3 decimal places.

[4 marks]

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

$$x = 1 \pm \sqrt{(-1)^2 - 4 \times 4 \times -2} \qquad x = 1 + \sqrt{33}$$

$$x = \frac{1 \pm \sqrt{33}}{8}$$

$$x = 1 - \sqrt{33}$$

Answer 
$$\propto = 0.843$$

$$\infty = -0.593$$

Solve  $5x^2 - 5x + 5 = 11 - 10x$ 8

$$\alpha = 5 b = 5 c = -6$$

Give your answers correct to 2 decimal places.

[4 marks]

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

$$x = -5 \pm \sqrt{5^2 - 4 \times 5 \times -6} \qquad x = -5 + \sqrt{145}$$

$$x = -5 \pm \sqrt{145}$$

$$x = -5 - \sqrt{145}$$

Answer x = 0.70



7

Turn over ▶

<del>17</del>

9

Solve 
$$x^2 + 10x + 15 = 0$$



Give your answers in the form  $a \pm \sqrt{b}$  where a and b are integers.

[4 marks]

$$x = -10 \pm \sqrt{10^{2} - 4 \times 1 \times 15} \qquad x = -10 \pm 2\sqrt{10}$$

$$x = -10 \pm \sqrt{40} \qquad x = -5 \pm \sqrt{10}$$

Answer 
$$x = -5 \pm \sqrt{10}$$

10

Solve 
$$x^2 + 6x + 1 = 0$$

Solve  $x^2 + 6x + 1 = 0$   $\alpha = 1$  b = 6 c = 1

Give your answers in the form  $a \pm b\sqrt{2}$  where a and b are integers.

[4 marks]

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

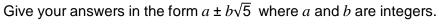
$$x = \frac{-6 \pm \sqrt{32}}{2} \qquad x = -3 \pm 2\sqrt{2}$$

Answer 
$$x = -3 \pm 2\sqrt{2}$$

11

Solve 
$$x^2 - 14x + 4 = 0$$

Solve 
$$x^2 - 14x + 4 = 0$$
  $0 = 1$   $0 = -14$   $0 = 4$ 



[4 marks]

$$x = \frac{14 \pm \sqrt{(-4)^2 - 4 \times 1 \times 4}}{2} \qquad x = \frac{14 \pm 6\sqrt{5}}{2}$$

$$x = \frac{14 \pm \sqrt{180}}{2} \qquad x = \frac{7}{2} \pm 3\sqrt{5}$$

Answer 
$$x = 7 \pm 3\sqrt{5}$$

