The Quadratic Formula

SCAN ME

REVISE THIS TOPIC

1 Solve $3x^2 + 6x + 2 = 0$
Give your answers correct to 2 decimal places.

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

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

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

$$x = \frac{-6 + \sqrt{12}}{6}$$

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

$x = -0.42 \quad x = -1.58$

(Total for Question 1 is 3 marks)

2 Solve $5x^2 + 2x - 4 = 0$
Give your answers correct to 3 significant figures.

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

$$x = \frac{-2 \pm \sqrt{2^2 - 4 \times 5 \times -4}}{10}$$

$$x = \frac{-2 \pm \sqrt{84}}{10}$$

$$x = \frac{-2 + \sqrt{84}}{10}$$

$$x = \frac{-2 - \sqrt{84}}{10}$$

$x = 0.717 \quad x = -1.12$

(Total for Question 2 is 3 marks)

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

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

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

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

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

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

$x = 1.30 \quad x = -2.30$

(Total for Question 3 is 3 marks)

4 Solve $6x^2 - 3x - 4 = 0$
Give your answers correct to 3 significant figures.

$a = 6 \quad b = -3 \quad c = -4$

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

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

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

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

$x = 1.10 \quad x = -0.604$

(Total for Question 4 is 3 marks)

5 Solve $3x^2 - 6x - 1 = 0$
Give your answers correct to 3 significant figures.

$a = 3 \quad b = -6 \quad c = -1$

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

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

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

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

$x = 2.15 \quad x = -0.155$

(Total for Question 5 is 3 marks)

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

$a = -3 \quad b = 2 \quad c = 4$

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

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

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

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

$x = -0.869 \quad x = 1.535$

(Total for Question 6 is 3 marks)

7 Solve $4x^2 + 5x - 2 = 6x$
Give your answers correct to 3 decimal places.

$a = 4 \quad b = -1 \quad c = -2$

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

$$x = \frac{1 \pm \sqrt{(-1)^2 - 4 \times 4 \times -2}}{8}$$

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

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

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

$x = 0.843 \quad x = -0.593$

(Total for Question 7 is 4 marks)

8 Solve $5x^2 - 5x + 5 = 11 - 10x$
Give your answers correct to 2 decimal places.

$a = 5 \quad b = 5 \quad c = -6$

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

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \times 5 \times -6}}{10}$$

$$x = \frac{-5 \pm \sqrt{145}}{10}$$

$$x = \frac{-5 + \sqrt{145}}{10}$$

$$x = \frac{-5 - \sqrt{145}}{10}$$

$x = 0.70 \quad x = -1.70$

(Total for Question 8 is 4 marks)

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

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

$a=1 \quad b=10 \quad c=15$

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

$x = \dfrac{-10 \pm \sqrt{40}}{2}$

$x = \dfrac{-10 \pm 2\sqrt{10}}{2}$

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

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

(Total for Question 9 is 4 marks)

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

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

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

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

$x = \dfrac{-6 \pm \sqrt{32}}{2}$

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

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

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

(Total for Question 10 is 4 marks)

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

Give your answers in the form $a \pm b\sqrt{5}$ where a and b are integers.

$a=1 \quad b=-14 \quad c=4$

$x = \dfrac{14 \pm \sqrt{(-14)^2 - 4 \times 1 \times 4}}{2}$

$x = \dfrac{14 \pm \sqrt{180}}{2}$

$x = \dfrac{14 \pm 6\sqrt{5}}{2}$

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

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

(Total for Question 11 is 4 marks)