



QUADRATIC EQUATIONS

THE QUADRATIC FORMULA

Ref: G243. **2R1**

<p>A1 Solve $3x^2 + 8x + 2 = 0$ Give your answers correct to 3 significant figures.</p>	<p>A2 Solve $2x^2 + 5x - 4 = 0$ Give your answers correct to 3 significant figures.</p>	<p>A3 Solve $4x^2 - 7x + 1 = 0$ Give your answers correct to 3 significant figures.</p>	<p>A4 Solve $2x^2 - 4x - 9 = 0$ Give your answers correct to 3 significant figures.</p>
<p>B1 Solve $5x^2 + 8x - 1 = 4$ Give your answers correct to 3 significant figures.</p>	<p>B2 Solve $5x^2 + 7x + 3 = x^2$ Give your answers correct to 3 significant figures.</p>	<p>B3 Solve $x^2 - 4x + 3 = 4x + 8$ Give your answers correct to 3 significant figures.</p>	<p>B4 Solve $5 + 9x + 4x^2 = 4$ Give your answers correct to 3 significant figures.</p>
<p>C1 Calculate the discriminant and state the number of solutions to: $x^2 + 4x + 2$</p>	<p>C2 Calculate the discriminant and state the number of solutions to: $2x^2 + 4x + 5$</p>	<p>C3 Calculate the discriminant and state the number of solutions to: $3x^2 - 7x - 2$</p>	<p>C4 Calculate the discriminant and state the number of solutions to: $x^2 - 6x + 9$</p>
<p>D1 Write down an equation, which leads to the calculation $x = \frac{-3 \pm \sqrt{9+12}}{2}$</p>	<p>D2 Write down an equation, which leads to the calculation $x = \frac{11 \pm \sqrt{121-40}}{4}$</p>	<p>D3 Write down an equation, which leads to the calculation $x = \frac{-4 \pm \sqrt{16+20}}{10}$</p>	<p>D4 Write down an equation, which leads to: $x = \frac{-8 \pm \sqrt{64-48}}{6}$</p>



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<p>A1 Solve</p> $3x^2 + 8x + 2 = 0$ $x = \frac{-8 \pm \sqrt{(8)^2 - 4(3)(2)}}{2(3)}$ $= -0.279 \text{ or } -3.39$	<p>A2 Solve</p> $2x^2 + 5x - 4 = 0$ $x = \frac{-5 \pm \sqrt{(5)^2 - 4(2)(-4)}}{2(2)}$ $= 0.637 \text{ or } -3.14$	<p>A3 Solve</p> $4x^2 - 7x + 1 = 0$ $x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(4)(1)}}{2(4)}$ $= 1.59 \text{ or } 0.157$	<p>A4 Solve</p> $2x^2 - 4x - 9 = 0$ $x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(-9)}}{2(2)}$ $= 3.35 \text{ or } -1.35$
<p>B1 Solve</p> $5x^2 + 8x - 1 = 4$ $5x^2 + 8x - 5 = 0$ <p>...</p> $x = 0.481 \text{ or } x = -2.08$	<p>B2 Solve</p> $5x^2 + 7x + 3 = x^2$ $4x^2 + 7x + 3 = 0$ <p>...</p> $x = -1 \text{ or } x = -0.75$	<p>B3 Solve</p> $x^2 - 4x + 3 = 4x + 8$ $x^2 - 8x - 5 = 0$ <p>...</p> $x = 8.58 \text{ or } x = -0.583$	<p>B4 Solve</p> $5 + 9x + 4x^2 = 4$ $4x^2 + 9x + 1 = 0$ <p>...</p> $x = -2.13 \text{ or } x = -0.117$
<p>C1</p> $x^2 + 4x + 2$ $b^2 - 4ac = 16 - 8$ $= 8$ <p>(+ve) \therefore two solutions</p>	<p>C2</p> $2x^2 + 4x + 5$ $b^2 - 4ac = 16 - 40$ $= -24$ <p>(-ve) \therefore no solutions</p>	<p>C3</p> $3x^2 - 7x - 2$ $b^2 - 4ac = 49 - (-24)$ $= 73$ <p>(+ve) \therefore two solutions</p>	<p>C4</p> $x^2 - 6x + 9$ $b^2 - 4ac = 36 - 36$ $= 0$ <p>(zero) \therefore one solution</p>
<p>D1 $x^2 + 3x - 3 = 0$</p> <p>Write down an equation, which leads to the calculation</p> $x = \frac{-3 \pm \sqrt{9 + 12}}{2}$ <p>① b^2 ② $2a$ ③ $4ac$</p>	<p>D2 $2x^2 - 11x + 5 = 0$</p> <p>Write down an equation, which leads to the calculation</p> $x = \frac{11 \pm \sqrt{121 - 40}}{4}$	<p>D3 $5x^2 + 4x - 1 = 0$</p> <p>Write down an equation, which leads to the calculation</p> $x = \frac{-4 \pm \sqrt{16 + 20}}{10}$	<p>D4 $3x^2 + 8x + 4 = 0$</p> <p>Write down an equation, which leads to:</p> $x = \frac{-8 \pm \sqrt{64 - 48}}{6}$