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Quadratic Formula

Grade 7 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (50 marks) build up to the harder Grade 8–9 style questions at the end; aim to complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 74 marks.

Warm-up

1 For the equation $-x^2 - 7x + 2 = 0$, work out the value of $b^2 - 4ac$. **[2 marks]**

Answer _____

2 For the equation $4x^2 + 4x - 3 = 0$, work out the value of $b^2 - 4ac$. **[2 marks]**

Answer _____

3 For the equation $5x^2 + 4x + 4 = 0$, work out the value of $b^2 - 4ac$. **[2 marks]**

Answer _____

4 For the equation $5x^2 + 3x + 4 = 0$, work out the value of $b^2 - 4ac$. **[2 marks]**

Answer _____

5 For the equation $3x^2 + 4x - 2 = 0$, work out the value of $b^2 - 4ac$. **[2 marks]**

Answer _____

Core

6 Solve $x^2 + 5x - 5 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

7 Solve $x^2 + 7x + 5 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

8 Solve $x^2 + 7x + 4 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

9 Solve $x^2 + 7x + 7 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

10 Solve $x^2 + 9x - 5 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

Stretch

11 Solve $4x^2 + 6x - 2 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

12 Solve $2x^2 + 8x - 1 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

13 Solve $3x^2 - 8x + 3 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

14 Solve $2x^2 + 9x + 3 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

15 Solve $3x^2 + 3x - 5 = 0$. Give your answers to 3 significant figures. **[4 marks]**

Answer _____

Challenge

16 The equation $x^2 + 2x + k = 0$ has exactly one solution. Work out the value of k. **[5 marks]**

Answer _____

17 Show that $3x^2 + 5 = 0$ has no real solutions. **[4 marks]**

Answer _____

18 Solve $x^2 + 6x - 5 = 0$. Give your answers in the form $a \pm \sqrt{b}$, simplifying any surds. **[5 marks]**

Answer _____

19 Solve $x(x + 3) = 5$. Give your answers to 3 significant figures. **[5 marks]**

Answer _____

20 The equation $x^2 + bx + c = 0$ has solutions $x = -2 + \sqrt{5}$ and $x = -2 - \sqrt{5}$. Find the values of b and c. **[5 marks]**

Answer _____