

Using The Quadratic Formula

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You *can* use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

1 State the quadratic formula.

(Level 5)

[1 mark]

2 For the following quadratic equations, determine the values for a , b and c in the quadratic formula.

(Level 5)

2(a)

$$x^2 + x - 10 = 0$$

[1 mark]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

2(b)

$$5x^2 + 3x - 22 = 0$$

[1 mark]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

2(c)

$$-x^2 + 3x + 1 = 0$$

[1 mark]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

2(d)

$$-x^2 - x - 1 = 0$$

[1 mark]

$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}} \quad c = \underline{\hspace{2cm}}$$

Turn over for next question

3 For the following quadratic equations, determine the values for a, b and c in the quadratic formula.

(Level 5)

3(a)

$$2x^2 + x = -10$$

[2 marks]

$a =$ _____ $b =$ _____ $c =$ _____

3(b)

$$5x^2 = -3x + 22$$

[1 mark]

$a =$ _____ $b =$ _____ $c =$ _____

3(c)

$$\frac{x^2}{3} = x + 1$$

[1 mark]

$a =$ _____ $b =$ _____ $c =$ _____

3(d)

$$x^2 = \frac{7x - 22}{3}$$

[2 marks]

$a =$ _____ $b =$ _____ $c =$ _____

Turn over for next question

4 Use the quadratic formula to solve the following quadratic equations.

(Level 6)

Give all answers to 2 decimal places.

You **must** show your working.

4(a)

$$x^2 + x - 10 = 0$$

[2 marks]

$$x = \underline{\hspace{2cm}} \qquad x = \underline{\hspace{2cm}}$$

4(b)

$$5x^2 + 3x - 22 = 0$$

[2 marks]

$$x = \underline{\hspace{2cm}} \qquad x = \underline{\hspace{2cm}}$$

Turn over for next question

4(c)

$$-x^2 + 3x + 1 = 0$$

[2 marks]

$$x = \underline{\hspace{2cm}} \qquad x = \underline{\hspace{2cm}}$$

4(d)

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

[2 marks]

$$x = \underline{\hspace{2cm}} \qquad x = \underline{\hspace{2cm}}$$



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Turn over ►

5 Solve for x , using the quadratic formula; (Level 6)

$$x^2 + 10x + 20 = 0$$

Give your answer as a surd.

[3 marks]

Answer _____

6 Solve for x , using the quadratic formula; (Level 6)

$$x^2 - 2(x + 5) = 4x + 8$$

Give your answer to 2 decimal places.

[3 marks]

Answer _____

7 Solve for x , using the quadratic formula. (Level 6)

$$3x^2 - 42x + 147 = 0$$

[2 marks]

Answer _____

Turn over for next question

8 Solve for x , using the quadratic formula.

(Level 7)

$$x^2 - 6 = \frac{2x + 12}{-6}$$

Give your answer in its exact form.

[3 marks]

Answer _____



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