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GCSE MATHEMATICS

AQA | Edexcel | OCR | WJEC

(Level 6-7)

Quadratic Inequalities (Algebraically)

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(a) For which values of x is the following inequality true? *(Level 6)*

$$x^2 - 3x + 4 > 2$$

[1 mark]

$x = 0$ $\quad$ $x = 2$

$x = 1$ $\quad$ $x = 3$

1(b) For which inequality is the value of x true?

$$x = 7$$

[1 mark]

$x^2 - 7x + 7 < 7$ $\quad$ $-x^2 + 7x + 7 < 7$

$x^2 + 7x - 7 < 7$ $\quad$ $-x^2 + 7x - 7 < 7$

1(c) Which solutions satisfy the following inequality?

$$x^2 + 7x - 30 < 0$$

[1 mark]

$3 < x < 4$ $\quad$ $-10 < x < 3$

$-3 < x < 10$ $\quad$ $-5 < x < 6$

Turn over for next question

3

2 Solve the following inequalities: *(Level 6)*

2(a) $x^2 + 5x - 13 \leq 1$

[2 marks]

Answer _____

2(b) $7x^2 - 22x + 16 \leq 0$

[2 marks]

Answer _____

2(c) $x^2 > 4(8 - x)$

[2 marks]

Answer _____

2(d) $x^2 - x - 30 \geq 0$

[2 marks]

Answer _____

Turn over for next question

8

3 Donald and Amir disagree about the solution to the inequality, *(Level 7)*

$$x^2 - 4x - 13 \geq -8$$

Donald claims that the solution is $x \leq -1$

Amir states that the solution is $x \geq 5$

Who is correct and why?

[3 marks]

Answer _____

3

4 For the following inequality, *(Level 7)*

$$-x^2 + 7x - 12 \geq 0$$

determine if the solution is,

$$3 \leq x \leq 4 \text{ or } x \geq 4, \quad x \leq 3$$

[4 marks]

Answer _____

4

5 Solve for the following inequality, *(Level 7)*

$$x^2 - 9x - 5 \leq -4x - 9$$

[3 marks]

_____ $\leq x \leq$ _____

3

END