HIGHER

8.6 Quadratic Inequalities: 10-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Solve the inequality $x^2 - 5x + 6 < 0$. Give your answer in inequality form.

(Total for Question 1 is 2 marks)

2 Solve the inequality $x^2 - x - 6 \geq 0$. Give your answer both in inequality form and in set notation.

(Total for Question 2 is 3 marks)

3 The equation $x^2 + kx + 9 = 0$ has no real roots. Find the range of possible values of k.

(Total for Question 3 is 4 marks)

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Mark scheme · 8.6 Quadratic Inequalities: 10-minute Pack

Question 1

factorise to (x-2)(x-3) or identify roots x=2,3	**M1**
$2 < x < 3$ cao	**A1**

Answer: $2 < x < 3$ (inequality form: $2 < x < 3$)

Question 2

factorise to (x-3)(x+2) and identify roots -2 and 3	**M1**
decide sign: $x \leq -2$ or $x \geq 3$	**M1**
set notation: (-infty, -2] U [3, +infty) cao	**A1**

Answer: Inequality form: $x \leq -2$ or $x \geq 3$. Set notation: (-infty, -2] U [3, +infty)

Question 3

writes the discriminant $k^2 - 4(1)(9)$ oe	**M1**
sets discriminant < 0, i.e. $k^2 - 36 < 0$	**M1**
factorises $(k-6)(k+6) < 0$ or finds critical values $k = -6$, $k = 6$	**M1**
$-6 < k < 6$ oe	**A1**

Answer: $-6 < k < 6$

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