

"Solve linear and quadratic inequalities, including inequalities with fractions, and represent solut

Question 1

Find the set of values of x for which

$$4x - 5 > 15 - x$$

(2 marks)

Question 2

Solve

$$-3 \leq \frac{x}{5} + 2 < 10$$

Question 3

Solve

$$x^2 + 11x + 18 > 0$$

Question 4

Solve the inequality $2x^2 - x - 3 > 0$.

(2 marks)

Question 5

$$4p^2 - 20p + 9 < 0$$

Find the set of possible values of p .

(4 marks)

Question 6

Find the set of values of x for which $2x^2 - 5x - 12 < 0$

(4 marks)

Question 7

Solve the inequality

$$12 - x - x^2 > 0$$

(2 marks)

Question 8

Solve the inequality

$$6x + 5 < x^2 + 2x - 7$$

(5 marks)

Mark scheme

Question 1

$x > 4$

(a) $5x > 20$	<u>$x > 4$</u>	M1 A1	(2)
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Question 2

$x \geq -25$ and $x < 40$

Question 3

$x < -9$ or $x > -2$

Question 4

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$x < -1, x > \frac{3}{2}$	M1 A1ft
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Question 5

$(2p-9)(2p-1)=0 \Rightarrow p=...$ to obtain $p =$	Attempt to solve the given quadratic to find 2 values for p . See general guidance.	M1
$p = \frac{9}{2}, \frac{1}{2}$	Both correct. May be implied by e.g. $p < \frac{9}{2}, p < \frac{1}{2}$. Allow equivalent values e.g. 4.5, $\frac{36}{8}, 0.5$ etc. If they use the quadratic formula allow $\frac{20 \pm 16}{8}$ for this mark but not $\sqrt{256}$ for 16 and allow e.g. $\frac{5}{2} \pm 2$ if they complete the square.	A1
$\frac{1}{2} < p < 4\frac{1}{2}$ Allow equivalent values e.g. $\frac{36}{8}$ for $4\frac{1}{2}$	M1: Chooses 'inside' region i.e. Lower Limit $< p <$ Upper Limit or e.g. Lower Limit $\leq p \leq$ Upper Limit A1: Allow $p \in (\frac{1}{2}, 4\frac{1}{2})$ or just $(\frac{1}{2}, 4\frac{1}{2})$ and allow $p > \frac{1}{2}$ and $p < 4\frac{1}{2}$ and $4\frac{1}{2} > p > \frac{1}{2}$ but $p > \frac{1}{2}, p < 4\frac{1}{2}$ scores M1A0 $\frac{1}{2} > p > 4\frac{1}{2}$ scores M0A0	M1A1

Question 6

$$(2x+3)(x-4) = 0, \text{ 'Critical values' are } -\frac{3}{2} \text{ and } 4$$

$$-\frac{3}{2} < x < 4$$

M1, A1

M1 A1ft

(4)

Question 7

$$-4 < x < 3$$

M1
A1**Question 8**

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$$0 < x^2 - 4x - 12$$

$$(x-6)(x+2)$$

M1
M1
A1
M1

$$x > 6, x < -2$$

A1