



## FIRST TERM GLOBAL TEST

4° ESO



**Exercise 1: (2 ptos)** Work out:

$$\text{a) } \left. \begin{array}{l} 25 - x^2 \geq 0 \\ x^2 + 2x - 3 > 0 \end{array} \right\} \rightarrow x \in [-5, -3) \cup (1, 5] \quad (1.25)$$

$$\text{b) } (x-4)^2 - 5x < x^2 + 3x - 1 \rightarrow x \in \left(\frac{17}{16}, +\infty\right) \quad (0.75)$$

**Exercise 2: (2 ptos)**

$$\text{a) Work out: } \sqrt{x+3} + \sqrt{x-1} = 2 \rightarrow x = 1 \quad (1.25)$$

$$\text{b) Rationalize and simplify if possible: } \frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}} = 4 - \sqrt{15} \quad (0.75)$$

**Exercise 3: (2.5 ptos)** Work out:

$$\text{a) } \left. \begin{array}{l} x^2 - 5y^2 = 31 \\ xy = 6 \end{array} \right\} \rightarrow \begin{array}{l} (6, 1) \\ (-6, -1) \end{array} \quad (1.5)$$

$$\text{b) } \left. \begin{array}{l} x^2 + 2y^2 = 57 \\ x - y^2 = -11 \end{array} \right\} \rightarrow \begin{array}{ll} (-7, 2) & (-7, -2) \\ (5, 4) & (5, -4) \end{array} \quad (1)$$

**Exercise 4: (1.25 ptos)** Work out using the properties of logarithms:

$$\log_5 \frac{\sqrt[2]{25} \cdot \sqrt[3]{625}}{\sqrt{5^{-1}}} = \frac{89}{42}$$

**Exercise 5: (2.25 ptos)** Work out:

$$\text{a) } \frac{2x}{x+1} + \frac{x-3}{x-5} - \frac{x^2-1}{x^2-4x-5} = \frac{2x^2-12x-2}{x^2-4x-5} \quad (1.25)$$

$$\text{b) } \frac{x^2-7x+6}{x^2-2x+1} \cdot \frac{5x^2-5x}{x^2-36} = \frac{5x}{x+6} \quad (1)$$

