



**FIRST TERM GLOBAL TEST**  
**4° ESO**



**Exercise 1: (1 pto)** Given the polynomial  $P(x) = 5x^3 + ax^2 + bx + 4$  find the values of  $a$  and  $b$  so that when dividing by  $(x+1)$  the remainder is 3 and when dividing by  $(x-2)$  the remainder is 54

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

$$\begin{array}{l} \text{a) } \left. \begin{array}{l} xy = 12 \\ 2x^2 - y^2 = 2 \end{array} \right\} \\ \text{b) } \left. \begin{array}{l} 2x - y = 6 \\ 3x^2 - y^2 = 59 \end{array} \right\} \end{array}$$

**Exercise 3: (1 pto)** Solve and factorize  $P(x) = x^6 - 6x^5 + 9x^4 + 4x^3 - 12x^2 = 0$

**Exercise 4: (2 ptos)** Work out:

$$\begin{array}{l} \text{a) } \left. \begin{array}{l} x^2 - 9 \geq 0 \\ 5x - x^2 > 0 \end{array} \right\} \\ \text{b) } \left. \begin{array}{l} 5(x-2) - 3x \geq 7x - 4 \\ x^2 + 4x - 5 < 0 \end{array} \right\} \end{array}$$

**Exercise 5: (1.5 ptos)**

a) Work out:  $\sqrt{x+5} + \sqrt{x-3} = 2$

b) Rationalize and simplify if possible:  $\frac{4 - \sqrt{2}}{4 + \sqrt{2}} =$

**Exercise 6: (2.5 ptos)** Work out:

a)  $\frac{x^2 - 2}{x^2 + 2x - 15} + \frac{x}{x+5} - \frac{x-1}{x-3} =$

b)  $\frac{3x^2 - 6x}{x^2 + x} \cdot \frac{x^2 + 3x + 2}{x^2 - 4} =$

c)  $\frac{x^2 - 6x + 9}{x^2 - 25} \cdot \frac{x^2 - 3x}{x+5} =$

