



**FRACTIONS, EQUATIONS, INEQUALITIES AND
SYSTEMS TEST - 4^o ESO**



Exercise 1: (2.5 points) Solve the following non-linear simultaneous equations with two variables:

$$\text{a) } \left. \begin{array}{l} x + 3y = 2 \\ x^2 - 5y^2 = 20 \end{array} \right\} \quad (1)$$

$$\text{b) } \left. \begin{array}{l} xy = 10 \\ x^2 - 4y^2 = 9 \end{array} \right\} \quad (1.5)$$

Exercise 2: (2.75 points) Work out:

$$\text{a) } \left(\frac{15}{x-1} - \frac{5}{x^2-1} \right) : \frac{3x+2}{x+1} = \quad (1.25)$$

$$\text{b) } \frac{x^2-4x-5}{x^3+2x^2+x} \cdot \frac{x^3-x}{x^2-25} = \quad (0.75)$$

$$\text{c) } (x-1)^2 - 3x \geq (x+5)^2 \quad (0.75)$$

Exercise 3: (1.75 points) Solve the following radical equations:

$$\text{a) } \sqrt{3x-6} + x = 8$$

$$\text{b) } \sqrt{4x+1} - \sqrt{x-1} = 2$$

Exercise 4: (2.5 points) Solve the following systems of inequalities:

$$\text{a) } \left. \begin{array}{l} x^2 - 5x < 0 \\ 9 - x^2 \geq 0 \end{array} \right\}$$

$$\text{b) } \left. \begin{array}{l} x^2 + 3x - 10 \geq 0 \\ x^2 - 4 \leq 0 \end{array} \right\}$$

Exercise 5: (0.5 points) Find the points where $f(x) > 0$:

