

EQUATIONS TEST – 3º ESO

Exercise 1: (0.75 points) Solve the following equation:

$$\frac{2x+1}{5} - \frac{3x-2}{6} = \frac{x-1}{4} - 2$$

Exercise 2: (1 point) Solve these quadratic equations without using the formula:

a) $x^2 - 49 = 0$

b) $x^2 + 3x = 0$

c) $25x^2 - 16 = 0$

d) $5x^2 - 10x = 0$

Exercise 3: (1.25 points) Solve the following quadratic equations:

a) $x^2 + 6x + 8 = 0$

b) $x^2 - 2x - 3 = 0$

c) $x^2 - 10x + 25 = 0$

d) $x^2 - 3x + 20 = 0$

Exercise 4: (0.5 points) Find the value of k so the equation $x^2 + kx + 100 = 0$ has a double root.

Exercise 5: (0.5 points) Write an equation whose roots are $x = 0$ triple, $x = -1$ double and $x = 7$. What's its degree?

Exercise 6: (1 point) The product of two consecutive numbers equals two hundred seventy-two. Find the numbers.

Exercise 7: (2.5 points) Solve the following simultaneous equations using the indicated method:

a)
$$\left. \begin{array}{l} 2x + y = 7 \\ 5x - 3y = 23 \end{array} \right\} \text{ Substitution}$$

b)
$$\left. \begin{array}{l} 2x + y = 1 \\ 3x + 2y = 4 \end{array} \right\} \text{ Elimination}$$

c)
$$\left. \begin{array}{l} x - 3y = 4 \\ 4x - y = -6 \end{array} \right\} \text{ Graphically}$$

Exercise 8: (1.5 points) Solve and classify the following systems of equations, using the method you prefer:

a)
$$\left. \begin{array}{l} 2x + y = 3 \\ 4x + 2y = 7 \end{array} \right\}$$

b)
$$\left. \begin{array}{l} 2x + 3y = 5 \\ 3x + 4y = 6 \end{array} \right\}$$

c)
$$\left. \begin{array}{l} 3x + 2y = 5 \\ 9x + 6y = 15 \end{array} \right\}$$

Exercise 9: (1 point) Yesterday I went to the supermarket and I bought milk and juice. In total I got fourteen tetra-bricks (ok, this got out of my hands) and I spent €10.5. Putting aside the fact that I am broke and insane, and knowing that the milk costs €0.55, and the juice €0.9, how many bricks did I get of each type?