



SECOND TERM GLOBAL TEST
3º ESO



Exercise 1: (3 ptos) Factorize the following polynomials and indicate their roots:

a) $P(x) = x^4 + 6x^3 + 13x^2 + 12x + 4$

Roots: $x = -1$ double, $x = -2$ double

Factorization: $(x+1)^2(x+2)^2$

b) $Q(x) = x^5 - 5x^3 + 4x$

Roots: $x = 0$, $x = \pm 1$, $x = \pm 2$

Factorization: $x(x+1)(x-1)(x+2)(x-2)$

c) $R(x) = x^3 - 2x^2 + 9x - 18$

Roots: $x = 2$

Factorization: $(x-2)(x^2+9)$

Exercise 2: (0.75 ptos) Find the value of k so that the polynomial $P(x) = x^3 + kx^2 + x + 8$ is divisible by $(x+1)$ $k = -6$

Exercise 3: (3.25 ptos) Solve and classify the following systems of equations using the indicated method:

a)
$$\left. \begin{array}{l} 2x - y = 3 \\ 6x - 3y = 9 \end{array} \right\} \text{ Substitution}$$

An infinity of solutions, Consistent dependent

b)
$$\left. \begin{array}{l} 5x - y = 6 \\ 8x - 3y = 11 \end{array} \right\} \text{ Elimination}$$

$x = 1$

$y = -1$

Consistent independent

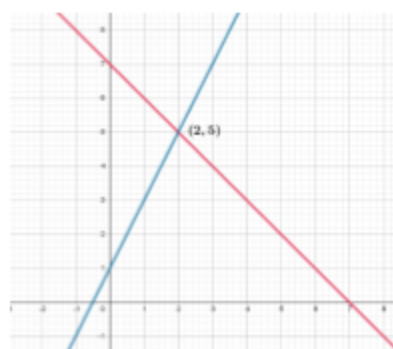
c)
$$\left. \begin{array}{l} 2x + 3y = 4 \\ 5x - 2y = 1 \end{array} \right\}$$

$x = 11/19$

$y = 18/19$

Consistent independent

d)
$$\left. \begin{array}{l} x + y = 7 \\ 2x - y = -1 \end{array} \right\} \text{ Graphical}$$



Exercise 4: (1 pto) Divide the following polynomials: $(4x^4 - 6x^2 + 2x - 10) : (x^2 - 2) =$

Quotient: $4x^2 + 2$ Remainder: $2x - 6$

Exercise 5: (2 pto) Solve the following equations:

a) $(2x+1)^2 - (x-2)^2 = -7 \rightarrow \boxed{x=-2} \quad \boxed{x=-2/3}$

b) $\frac{5x+1}{x-3} = \frac{3x-3}{x-5} \rightarrow \boxed{x=-1} \quad \boxed{x=7}$

