SECOND TERM GLOBAL TEST

3º ESO

Exercise 1: (1 pto) In a AP we know that $a_1 = 10$ and $a_{31} = 130$. Find the general term and the sum of the first 200 terms $a_n = 10 + 4 \cdot (n-1)$ $S_{200} = 81600$

Exercise 2: (1 pto) In an GP we know that $r = 2$ and $a_{10} = 3584$. Find the general term and the sum of the first 75 terms $a_n = 7 \cdot 2^{n-1}$ $S_{75} = 2.64 \cdot 10^{23}$

Exercise 3: (2.5 ptos) Solve the following systems of equations using the indicated method:

a) $\left.\begin{array}{l} 5x + 2y = 23 \\ 3x - y = 16 \end{array}\right\}$ Substitution $x = 5, \ y = -1$ (0.75)

b) $\left.\begin{array}{l} 7x - 5y = 11 \\ 3x - y = 7 \end{array}\right\}$ Elimination $x = 3, \ y = 2$ (0.75)

c) $\left.\begin{array}{l} 2x - 5y = 1 \\ 7x - y = 9 \end{array}\right\}$ You can do whatever you want $x = \dfrac{4}{3}, \ y = \dfrac{1}{3}$ (1)

Exercise 4: (1.5 ptos) Divide the following polynomials and **indicate the quotient and the remainder**:

a) $\left(3x^4 + x^2 - 5x - 7\right) : \left(x + 1\right)$ Quotient: $3x^3 - 3x^2 + 4x - 9$
Remainder: 2   (0.5)

b) $\left(x^4 + 6x^3 - 3x - 4\right) : \left(x^2 - 2\right)$ Quotient: $x^2 + 6x + 2$
Remainder: $9x$ (1)

Exercise 5: (3 ptos) Work out:

a) $\dfrac{x-1}{x-3} = \dfrac{x+3}{2x-6}$ $\rightarrow$ $x = 3, \ x = 5$

b) $(3x-2)(3x+2) - (x+9)^2 = 25$ $\rightarrow$ $x = 5, \ x = \dfrac{-11}{4}$

c) $x^4 - 26x^2 + 25 = 0$ $\rightarrow$ $x = \pm 1, \ x = \pm 5$

Exercise 6: (1 pto) The Cofradía del Santo Grial is having a very good period and, for fifteen years, they've been adding 50 nazarenos to their number every year. If they had 300 nazarenos 15 years ago, how many are they now? How many nazarenos will they have 20 years from now?

$a_{15} = 1000$ nazarenos now

$a_{35} = 2000$ nazarenos 20 years from now   They will need two hours to pass in front of you !!!!