



## FRACTIONS AND POLYNOMIALS TEST

### 2º ESO



**Exercise 1: (2.5 pts)** Work out:

$$\text{a) } \left(\frac{3}{5} - \frac{1}{3}\right)^{-2} - \left(\frac{2}{3} \cdot \frac{4}{5}\right)^{-1} + 1 = \frac{211}{16}$$

$$\text{b) } \left(\sqrt{\frac{4}{5} \cdot \frac{20}{9}}\right)^{-1} + \left(1 - \frac{2}{5}\right)^{-2} - 3^{-1} = \frac{37}{9}$$

**Exercise 2: (1 pt)** Indicate the coefficient, the literal part and the degree of the following monomials:

a) $-3a^2b^3z$	$\begin{cases} -3 \\ a^2b^3z \\ 6 \end{cases}$	b) <i>flower</i>	$\begin{cases} 1 \\ \text{flower} \\ 6 \end{cases}$	c) $x + y$	No monomial	d) 17	$\begin{cases} 17 \\ \cancel{z} \\ 0 \end{cases}$
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**Exercise 3: (1.5 pts)** Given the polynomials  $P(x) = 5x^2 - x + 4$ ,  $Q(x) = 3x^2 - x - 3$  and  $R(x) = x^2 - 2x$ , work out:

$$\text{a) } P + Q = 8x^2 - 2x + 1$$

$$\text{b) } P - Q = 2x^2 + 7$$

$$\text{c) } P \cdot R = 5x^4 - 11x^3 + 6x^2 - 8x$$

**Exercise 4: (1.25 pts)** Evaluate the polynomial  $P(x) = x^3 + 3x^2 - x + 5$  when  $x = 2$  and when  $x = -1$

$$P(2) = 23$$

$$P(-1) = 8$$

**Exercise 5: (1.5 pts)** Take out common factors:

$$\text{a) } 18x^4 - 12x^3 + 6x^2 - 24x = 6x(3x^3 - 2x^2 + x - 4)$$

$$\text{b) } 20a^5 - 25a^4 + 35a^3 - 5a^2 = 5a^2(4a^3 - 5a^2 + 7a - 1)$$

$$\text{c) } a^3b^2c + a^4b^3c^2 + a^5b^4c^3 = a^3b^2c(1 + abc + a^2b^2c^2)$$

**Exercise 6: (1.25 pts)** A certain internet company is installing a fiber connection for all the houses in a village. The first month they finished three sevenths of the buildings, and the second month, three fifths of the remaining ones. If there are still 288 buildings with the old connection, how many houses are there in the village? **1260 houses**

**Exercise 7: (1 pt)** Find the value of  $x$ :

$$\text{a) } \frac{6}{x} = \frac{3}{7} \rightarrow x = 14$$

$$\text{b) } \frac{7}{4} = \frac{x}{8} \rightarrow x = 14$$

$$\text{c) } \frac{16}{x} = \frac{x}{4} \rightarrow x = 8$$

