Solucions examen 2

1.- Calcula $\frac{2\sqrt{6}+\sqrt{3}}{3+\sqrt{7}} - \frac{\sqrt{6}}{2\sqrt{7}-3\sqrt{2}} + \frac{3}{2\sqrt{5}}$

- $\frac{2\sqrt{6}+\sqrt{3}}{3+\sqrt{7}} = \frac{2\sqrt{6}+\sqrt{3}}{3+\sqrt{7}} \cdot \frac{3-\sqrt{7}}{3-\sqrt{7}} = \frac{6\sqrt{6}-2\sqrt{42}+3\sqrt{3}-\sqrt{21}}{2}$
- $\frac{\sqrt{6}}{2\sqrt{7}-3\sqrt{2}} = \frac{\sqrt{6}}{2\sqrt{7}-3\sqrt{2}} \cdot \frac{2\sqrt{7}+3\sqrt{2}}{2\sqrt{7}+3\sqrt{2}} = \frac{2\sqrt{42}+3\sqrt{12}}{10}$
- $\frac{3}{2\sqrt{5}} = \frac{3}{2\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{10}$

$\frac{2\sqrt{6}+\sqrt{3}}{3+\sqrt{7}} - \frac{\sqrt{6}}{2\sqrt{7}-3\sqrt{2}} + \frac{3}{2\sqrt{5}} = \frac{6\sqrt{6}-2\sqrt{42}+3\sqrt{3}-\sqrt{21}}{2} - \frac{2\sqrt{42}+3\sqrt{12}}{10} + \frac{3\sqrt{5}}{10} =$

$\frac{30\sqrt{6}-10\sqrt{42}+15\sqrt{3}-5\sqrt{21}-2\sqrt{42}-3\sqrt{12}+3\sqrt{5}}{10} = \frac{30\sqrt{6}-12\sqrt{42}+15\sqrt{3}-5\sqrt{21}-3\sqrt{12}+3\sqrt{5}}{10}$

2.- Donats els polinomis $p(x) = x^4 + 2x^3 - 7x^2 - 8x + 12$, $q(x) = 7x^2 + 4x + 3$ i $t(x) = x^2 - 5$. Calcula:

a) q(x)•t(x)

b) p(x) : q(x)

c) (p(x)+q(x))•t(x)

d) q(-3) i t(2)

- $q(x)\bullet t(x) = (7x^2 + 4x + 3)\cdot(x^2 - 5) = 7\cdot x^4 + 4\cdot x^3 - 32\cdot x^2 - 20\cdot x - 15$
- $(p(x) + q(x))\bullet t(x) = (x^4 + 2x^3 - 4x + 15)\cdot(x^2 - 5) = x^6 + 2\cdot x^5 - 5\cdot x^4 - 14\cdot x^3 + 15\cdot x^2 + 20\cdot x - 75$
- $q(-3) = 7\cdot(-3)^2 + 4\cdot(-3) + 3 = 54$
- $t(2) = 2^2 - 5 = -1$

3.- Calcula

(i) $(2x + 5)^3 = 8\cdot x^3 + 60\cdot x^2 + 150\cdot x + 125$

(ii) $(3 - 2x)^4 = 16\cdot x^4 - 96\cdot x^3 + 216\cdot x^2 - 216\cdot x + 81$

4.- Calcula els valors de a i b per tal que es compleixi $(ax + 3)\bullet(2x + b) = 8x^2 + 14x + 6$

- $2\text{ax}^2 + abx + 6x + 3b = 8x^2 + 14x + 6 \rightarrow \begin{cases} 2a = 8 \rightarrow & a = 4 \\ 3b = 6 \rightarrow & b = 2 \end{cases}$