



1.-Descompón en factores primos los siguientes polinomios:

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|---------------------------------|------------------------------|
| a) $2x^4+x^3-8x^2-x+6$ | f) $x^4-6x^3+13x^2-12x+4$ |
| b) $x^5+x^4-13x^3-13x^2+36x+36$ | g) $(x^2+14x+48)(2x^2-7x-4)$ |
| c) $3x^4-7x^3-6x^2+12x+8$ | h) x^4-5x^2+4 |
| d) $3x^4-15x^2+12$ | i) x^4-1 |
| e) $2y^3+6y^2-8y-24$ | j) $x^4-x^3-11x^2+9x+18$ |

2.- Halla el m.c.d. y e. m.c.m. de los siguientes polinomios:

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|-----------------------------------|--------------------|-----------------------------------|-----------------|
| a) $P(x) = (2x-5)(x+3)(x-5)(x+1)$ | y | $Q(x) = (x-2)(x+3)^2(x-4)(x+1)^3$ | |
| b) $P(x) = z^4-2z^3-13z^2+14z+24$ | y | $Q(x) = (z^2-1)(z^2+4z+4)$ | |
| c) $P(x) = 5x^3-35x-30$, | $Q(x) = 3x^3-9x+6$ | y | $R(x) = 3x^2-3$ |
| d) $P(x) = x^3+2x^2-3x$ | y | $Q(x) = x^4-2x^2+x$ | |
| e) $P(x) = 2x^4+3x^3+x^2$ | y | $Q(x) = x^4+x^3$ | |

3.- Efectúa las siguientes operaciones y simplifica:

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| a) $\frac{1}{a+b} + \frac{b}{a^2-b^2} - \frac{a}{a^2+b^2} + \frac{2a^3}{a^4-b^4}$ | b) $\frac{2}{2a-3} - \frac{2}{3+2a} - \frac{2a+15}{4a^2-9}$ |
| c) $\frac{3}{2x-2} - \frac{1}{x+2} - \frac{x+10}{2x^2-8}$ | d) $\left[\left(\frac{a+b}{a-b} \cdot \frac{a^2+b^2}{a^2-b^2} \right) : \left(\frac{a^2+b^2}{a-b} \cdot \frac{a-b}{a^2-b^2} \right) \right] \cdot \left(\frac{a+b}{a-b} \right)^2$ |
| e) $\left(\frac{1}{1+x} + \frac{1}{1-x} \right) : \left(\frac{x^2}{x^2-1} + \frac{x}{x-1} + \frac{x}{x+1} \right)$ | f) $\frac{a-b}{b} + \frac{2a}{a-b} - \frac{a^3+a^2b}{a^2b-b^3}$ |
| g) $\frac{2}{x^2+3x} - \frac{x+1}{x^2-9} - \frac{x}{5x+15}$ | h) $\left[\left(\frac{a^2}{b^2} - 1 \right) : \left(\frac{a}{b} - 1 \right) \right] : \left(\frac{a^2+b^2}{b} + 2a \right)$ |
| i) $\left(\frac{x^2+6x+9}{x^4-81} \cdot \frac{x^3-9x}{x+3} \right) : \frac{x^2+2x-3}{x^2+9}$ | j) $\left(\frac{1+\frac{1}{a}}{a^2-2a+1} \cdot \frac{\frac{1}{a}-a^3}{\frac{1}{a^2}+1} \right) : \frac{1+\frac{2}{a}+\frac{1}{a^2}}{a-2+\frac{1}{a}}$ |
| k) $\frac{2x-3}{x^2-4x+4} - \frac{2x-1}{x^2-4} + \frac{2}{x^2+4x+4}$ | l) $5 - 2 \frac{x-1}{6} - \left(\frac{x}{2} : 3 - 1 \right)^2$ |
| m) $\left(\frac{x}{2x-2} - \frac{3}{x} \right) : \left(\frac{x^2-6x+6}{x^2-x} \right)$ | n) $\frac{1-\frac{a}{b}}{1+\frac{a}{b}} \cdot \frac{1+\frac{b}{a}}{1-\frac{b}{a}}$ |
| o) $\left(\frac{x^2-1}{x^2-9} - \frac{x^2-2}{x^2-3x} \right) : \frac{-3x^3+x^2+6x}{x^2-6x+9}$ | p) $\left(\frac{a^2+2ab}{b^2} + 1 \right) \cdot \left(\frac{a-b}{a+b} - \frac{a-b}{a} \right)$ |
| q) $\left(\frac{5}{x^2-x-2} - \frac{3}{x^2+x-6} - \frac{7}{x^2-6x+8} \right) \cdot \left(\frac{x^2+x}{2} - 3 \right)$ | s) $\frac{y^2-4xy+4x^2}{y^3-4yx^2} : \left(\frac{1}{2x} - \frac{1}{y} \right)$ |
| r) $\left(\frac{3}{x^2-x} - \frac{2}{x^2+x} \right) : \frac{x+5}{x^2-1}$ | |