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# MATEMATICA OCTAVO PARTE 1

POLINOMIOS

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## SUMA Y RESTA COMBINADAS DE POLINOMIOS

1) Dados los polinomios:

$$A) \frac{5}{4}x^6 - \frac{5}{4}x^5 + \frac{3}{8}x^4 - \frac{4}{5}x^3 + \frac{7}{2}x^2 - \frac{9}{2}x - \frac{3}{2}$$

$$B) -\frac{1}{2}x^3 + \frac{3}{4} - \frac{1}{2}x^5 - \frac{2}{3}x^2 - x^4$$

$$C) -\frac{2}{3} + \frac{7}{5}x + \frac{1}{2}x^2 - \frac{5}{16}x^3 + \frac{3}{5}x^4 - \frac{5}{12}x^5 - \frac{4}{3}x^6$$

$$D) -\frac{9}{16}x^5 - \frac{3}{4}x^2 + \frac{7}{15}x^4 - \frac{7}{3}x + \frac{3}{5}x^3 - 1$$

$$E) -a^x + a^{x+2} + a^{x+1}$$

$$F) -a^{x-1} + 5a^{x+2} + a^{x+1}$$

$$G) -a^x + 4a^{x-1} - 6a^{x+1}$$

Resolver

1)  $A - B - C$

2)  $(A - C - D) - (-A + B - D)$

3)  $(2B - 3C + 2A) - 2D$

4)  $-b/2 - c + 3A$

5)  $2E - F - G$

6)  $-F+2g-e$

### **MULTIPLICACION DE POLINOMIOS**

$$1) (3x^3 + 5x^2 - 6x + 1)(4x^2 - 6x - 10)$$

$$2) (-6x^3y + 12x^2y^2 - 8xy^3 - 5y^4)(2xy - x^2y^2 - 6x^3y)$$

$$3) (-5x^3 - 9x^2a - 6a^3)(3a^2 - 9x^2 + 15ax)$$

$$4) \left(-\frac{3}{5}y^2 + \frac{4}{3}xy - 2x^2\right)\left(\frac{15}{4}x^2 - 10xy + \frac{5}{3}y^2\right)$$

$$5) \left(-\frac{1}{2}x^4 + \frac{3}{2}x - \frac{1}{3}x^2 + 4x^3\right)\left(4x^3 + \frac{6}{5}x^2 - \frac{3}{4}\right)$$

$$6) \left(-\frac{1}{2}u^2 + 2 - u^5\right)\left(\frac{2}{5}u - \frac{3}{4}u^4 + 10\right)$$

$$7) (4m^3n^4 - 3m^7 + 2mn^6 - 10m^2n^5)(7m^2 - 6m + 3m^3 - 9)$$

$$8) (z^3 - 3z^2 + 3z - 5)\left(2z^3 + \frac{5}{8}z^4 - 3z + \frac{1}{2}\right)$$

$$9) (y^2 - y + 3)(y^5 - y^4 + y^3 - y^2 + 7)$$

$$10) \left( -4z^3 - 7 + 2z^3 + z^2 + z \right) \left( \frac{1}{2}z^4 - \frac{2}{3}z^3 + \frac{1}{2}z^2 \right)$$

### DIVISION DE POLINOMIOS

$$1) \left( -2a^4 - 7a^2 + 3a + 6 \right) \left( a^2 - 5a + 6 \right)$$

$$2) \left( 4 - 9a^2 + 12a^3 - 4a^4 \right) \left( 2 + 3a - 2a^2 \right)$$

$$3) \left( -13x^3 + 28x^2 + 6x + 6x - 42 \right) \left( x^2 - 5x + 6 \right)$$

$$4) \left( 8x^4 + 6x^3 + 9x^2 + 3x + 2 \right) \left( x^2 - 3x + 2 \right)$$

$$5) \left( x^5 - 4x^3y^2 - 8x^2y^3 + 12y^5 \right) \left( x^2 + 2xy + 3y^2 \right)$$

$$6) \left( 8x^3 + 2x^2 - \frac{1}{8}x + 5 \right) \left( 3x^2 + x + \frac{4}{5} \right)$$

$$7) \left( m^6 - m^5 + 5m^3 - 6m + 9 \right) \left( m^4 + 3 - m^2 + m^3 \right)$$

$$8) \left( x^5 - \frac{11}{2}x^4 + \frac{1}{5}x - \frac{79}{12} \right) \left( x^4 - 1 \right)$$

$$9) \left( x^5y^4 - \frac{1}{2}x^4y^3 + \frac{3}{5}x^3y^2 - \frac{1}{5} \right) \left( 3xy + 1 \right)$$

$$10) \left( \frac{3}{5}x^4 - \frac{17}{60}x^2 + \frac{7}{6}x + \frac{1}{10}x^3 \right) (x+2)$$

### VALOR NUMERICO

Si  $a = -1$   $b = -2$   $x = 2/3$   $y = -1/2$   $m = -1/3$   $n = -3$

1) Hallar el valor numérico de

$$-a^8 - 2a^2 - 5a + 4a^6 - 9a^4 + 8a^3 - 2a^5$$

$$2) -9m^2n + \frac{4}{3}m^3n^3 - 6mn^2 + 12m^4 - 10n^4 + \frac{1}{2}$$

$$3) -\frac{3}{5}x^2y + \frac{4}{3}x^4y^3 - \frac{8}{15}y^2 - 9x^4 + xy$$

### FRACCIONES ALGEBRAICAS

#### SUMAS Y RESTAS TIPO EXAMEN

$$1) \frac{x}{x+y} - \frac{2x^2}{x^2-y^2}$$

$$2) \frac{x+2}{3x-1} - \frac{x+1}{2-6x} - \frac{x^2+6x+3}{6x^3-11x^2+3x}$$

$$3) \frac{x-2}{2x^2-5x-3} + \frac{x-3}{2x^2-3x-2} - \frac{1-2x}{x^2-5x-14}$$

$$4) \frac{-1}{x+1} - \frac{5}{x - \frac{2}{3}} + \frac{3}{3-2x}$$

$$5) \frac{-1}{x-1} + \frac{1}{x^2+x-2} - \frac{x+1}{3-2x}$$

$$6) \frac{x}{x^2+x-2} + \frac{3}{-2x^2-4x+6} - \frac{x}{4x^2+20x+24}$$

$$7) \frac{a+1}{a^2+a-20} - \frac{a+4}{a^2-4a-5} + \frac{a+5}{a^2+5a+4}$$

$$8) \frac{x}{x^2+2x-3} - \frac{x+3}{x^2+x-2} + \frac{1}{x+2}$$

$$9) \frac{1}{a-3} + \frac{a+1}{-a^2+5a-6} + \frac{2}{2-3a+a^2}$$

$$10) \frac{3x+2}{x^2+3x-10} - \frac{5x+1}{x^2+4x-5} - \frac{1-4x}{x^2-3x+2}$$

$$11) \frac{2}{x^2+yx} + \frac{3}{xy} - \frac{22x^3+2y^3}{x^2y-xy^2}$$

$$12) \frac{n-3}{20n+10} + \frac{2n+5}{40n+20} + \frac{1-4n}{60n+30}$$

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## MULTIPLICACION Y DIVISION TIPO EXAMEN

$$1) \frac{m^4 - 2m^3n + m^2n^2}{m^2 + n^2} : m^3 + m^2n : \frac{m^3 - m^2n}{m^2 + 2mn + n^2} \cdot \frac{m^3 - mn^2}{m^2 - n^2}$$

$$2) \frac{x^2 - 3x - 10}{x^2 - 2x - 8} \cdot \frac{x^2 - 16}{x^2 + 4x} \cdot \frac{x^2 - 6x}{x + 2}$$

$$3) \frac{x^2 - 81}{2x^2 + 10x} \cdot \frac{x + 11}{x^2 - 36} \cdot \frac{2x - 12}{2x + 18} \cdot \frac{x^3 + 5x^2}{2x + 22}$$

$$4) \frac{x^2 + 7x + 10}{x^2 - 6x - 7} \cdot \frac{x^2 - 3x - 4}{x^2 + 2x - 15} \cdot \frac{x^2 - 2x - 8}{x^3 - 2x^2 - 3x}$$

$$5) \frac{8x^2 - 10x - 3}{6x^2 + 13x + 6} \cdot \frac{4x^2 - 9}{3x^2 + 2x} \cdot \frac{8x^2 + 14x + 3}{9x^2 + 12x + 4}$$

$$6) \left( n + 2m - \frac{14m^2}{2n + m} \right) \cdot \left( m - n + \frac{n^2 + 5m^2}{n + 4m} \right)$$

$$7) \left( m + n - \frac{n^2}{m - n} \right) \cdot \left( 1 - \frac{n}{n + m} \right)$$

$$8) \frac{64x^2 - 81}{x^2 - 81} \cdot \frac{8x - 9}{x^2 - 18x + 81} \cdot \frac{8x + 9}{x^2 + 18x + 81}$$

$$9) \frac{x^2 - 2x - 15}{2x + 4} \cdot \frac{x^2 + 2x - 3}{4x - 20} \cdot \frac{2x^2 - 20x + 50}{x + 2}$$

$$10) \quad \frac{b^2 - 1}{a^2 - 6a - 55} \cdot \frac{ab^2 + 11b^2}{ab + 3a} \cdot \frac{3b^2 + 3b}{a^2 - 5a}$$