

## OPERACIONES CON POLINOMIOS - IGUALDADES NOTABLES - FACTOR COMÚN

### A) EFECTUAR LAS SIGUIENTES OPERACIONES, INDICANDO EL GRADO DEL POLINOMIO RESULTANTE

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| 1) $(x^3-2x+5) \cdot (3x-9)$   | (Sol: $3x^4-9x^3-6x^2+33x-45$ , grado 4) |
| 2) $2x^3-6x^2+9x+1-(2x^2-6x-8)$  | (Sol: $2x^3-8x^2+15x+9$ , grado 3)       |
| 3) $(2x^2y^3)^3$   | (Sol: $8x^6y^9$ , grado 15)              |
| 4) $-x(-x)x$   | (Sol: $x^3$ )                            |
| 5) $-x+2x-5x^2+9x \cdot x+3x$  | (Sol: $4x^2+4x$ )                        |
| 6) $(2x^3-3x+1) \cdot (2x^2-7)$  | (Sol: $4x^5-20x^3+2x^2+21x-7$ )          |
| 7) $5x^3-2x^2+x+10-(3x^2-5x-9)$  | (Sol: $5x^3-5x^2+6x+19$ )                |
| 8) $(2x^2y^3)^4$   | (Sol: $16x^8y^{12}$ )                    |
| 9) $-x(-x)x^2$   | (Sol: $x^4$ )                            |
| 10) $-x^4+x^3-3x^2+2x \cdot x^2+3x$  | (Sol: $-x^4+3x^3-3x^2+3x$ )              |
| 11) $(5x^3-2x)(-x^2+5x-2)$   | (Sol: $-5x^5+25x^4-8x^3-10x^2+4x$ )      |
| 12) $(-5x^3+2x^2-4x)(-x^2+3x-1)$   | (Sol: $5x^5-17x^4+15x^3-14x^2+4x$ )      |
| 13) $(-2x^4+3x^3-x)(-x^2+2x-1)$  | (Sol: $2x^6-7x^5+8x^4-2x^3-2x^2+x$ )     |
| 14) Dados los polinomios $P(x) = -2x^3-x^2+2$ y $Q(x) = 3x^3+2x^2$ , calcular: |  |
| $2P(x)-Q(x)$   | (Sol: $-7x^3-4x^2+4$ )                   |
| $P(x)Q(x)$   | (Sol: $-6x^6-7x^5-2x^4+6x^3+4x^2$ )      |

### B) DESARROLLAR APLICANDO LAS FÓRMULAS DE IGUALDADES NOTABLES

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|----------------------------------|------------------------------------|
| 15) $(2-x^2)^2$                  | (Sol: $4-4x^2+x^4$ )               |
| 16) $(5-x)(5+x)$                 | (Sol: $25-x^2$ )                   |
| 17) $(-x-3)^2$                   | (Sol: $x^2+6x+9$ )                 |
| 18) $(6x+5)^2$                   | (Sol: $36x^2+60x+25$ )             |
| 19) $(5-x^2)^2$                  | (Sol: $25-10x^2+x^4$ )             |
| 20) $(4-x)(4+x)$                 | (Sol: $16-x^2$ )                   |
| 21) $(-x-5)^2$                   | (Sol: $x^2+10x+25$ )               |
| 22) $(3x+2)^2$                   | (Sol: $9x^2+12x+4$ )               |
| 23) $(-x^2+2x)^2$                | (Sol: $4x^2-4x^3+x^4$ )            |
| 24) $(5-2x)(5+2x)$               | (Sol: $25-4x^2$ )                  |
| 25) $(-x^3+3x)^2$                | (Sol: $9x^2-6x^4+x^6$ )            |
| 26) $(3-2a)(3+2a)$               | (Sol: $9-4a^2$ )                   |
| 27) $(-x^3-3x)^2$                | (Sol: $x^6+6x^4+9x^2$ )            |
| 28) $(3a^4b^3+2a^3)^2$           | (Sol: $9a^8b^6+12a^7b^3+4a^6$ )    |
| 29) $(2a^5-3a)^2$                | (Sol: $4a^{10}-12a^6+9a^2$ )       |
| 30) $(-4x^4y+3x^3)^2$            | (Sol: $9x^6-24x^7y+16x^8y^2$ )     |
| 31) $(-x^5-5x^3y^2)^2$           | (Sol: $x^{10}+10x^8y^2+25x^6y^4$ ) |
| 32) $(2a^3b^6-b^6)(2a^3b^6+b^6)$ | (Sol: $4a^6b^{12}-b^{12}$ )        |
| 33) $(3ab^4+2a^2)(2a^2-3ab^4)$   | (Sol: $4a^4-9a^2b^8$ )             |
| 34) $(4a^3+3a^2)(-4a^3+3a^2)$    | (Sol: $9a^4-16a^6$ )               |

### C) SACAR FACTOR COMÚN TODO LO QUE SEA POSIBLE

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|-----------------|-----------------------|
| 35) $x^4-5ax^2$ | (Sol: $x^2(x^2-5a)$ ) |
| 36) $5b-25b^2$  | (Sol: $5b(1-5b)$ )    |

37)  $3(x-2)+(x-2)^2-2x(x-2)$

*(Sol:  $(x-2)(3+(x-2)-2x)=(x-2)(1-x)$ )*

38)  $x^5-5bx^3$

*(Sol:  $x^3(x^2-5b)$ )*

39)  $25b^2-5b^3$

*(Sol:  $5b^2(5-b)$ )*

40)  $3(x-4)+(x-4)^2-2x(x-4)$

*(Sol:  $(x-4)(-1-x)=(4-x)(1+x)$ )*

41)  $15x^4-9x^3+3x^2$

*(Sol:  $3x^2(5x^2-3x+1)$ )*

42)  $16y^5-12x^2y^3+4y^2$

*(Sol:  $4y^2(4y^3-3x^2y+1)$ )*

43)  $25b^5-15a^2b^3+5b^2$

*(Sol:  $5b^2(5b^3-3a^2b+1)$ )*

**D) SIMPLIFICAR**

44) 
$$\frac{15x^2y^2 - 10x^3y^2 - 5x^2y}{5x^2y}$$

*(Sol:  $3y-2xy-1$ )*

45) 
$$\frac{14a^2b^2 - 7a^2b - 21a^3b}{7a^2b}$$

*(Sol:  $2b-1-3a$ )*

46) 
$$\frac{14a^2b^2 - 7a^2b - 21a^3b}{ab}$$

*(Sol:  $7a(2b-1-3a)$ )*

47) 
$$\frac{18x^2y^2 - 12x^2y - 24x^3y}{3x^3y}$$

*(Sol:  $\frac{2(3y-2-4x)}{x} = \frac{6y-4-8x}{x}$ )*

48) 
$$\frac{24x^2y^2 - 16x^3y - 8x^2y}{4x^3y^2}$$

*(Sol:  $\frac{2(3y-2x-1)}{xy}$ )*

49) 
$$\frac{24x^2y^2 - 16x^3y - 8x^2y}{4x^4y^2}$$

*(Sol:  $\frac{2(3y-2x-1)}{x^2y} = \frac{6y-4x-2}{x^2y}$ )*

50) 
$$\frac{18a^3b^2 - 6a^4b^3 + 2a^3b^2}{2a^3b^2}$$

*(Sol:  $10-3ab$ )*