

$$1. (3x^2 + 6xy - y^2) - (x + y)(x - y):$$

$$(3x^2 + 6xy - y^2) - (x^2 - y^2) =$$

$$3x^2 + 6xy - y^2 - x^2 + y^2 =$$

$$2x^2 + 6xy$$

$$\mathbf{R/ 2x^2 + 6xy}$$

$$2. (2 - b)^2 - (1 + b)^2 =$$

$$4 - 4b + b^2 - (1 + 2b + b^2) =$$

$$4 - 4b + b^2 - 1 - 2b - b^2 =$$

$$3 - 6b$$

$$\mathbf{R/ 3 - 6b}$$

$$3. (4x^2 + 6xy - y^2) - (2x + y)(2x + y)$$

$$(4x^2 + 6xy - y^2) - (4x^2 + 4xy + y^2) =$$

$$4x^2 + 6xy - y^2 - 4x^2 - 4xy - y^2 =$$

$$2xy - 2y^2$$

$$\mathbf{R/ 2xy - 2y^2}$$

$$4. (a^2 - b)^2 - (a^3 + b)(a + b) =$$

$$a^4 - 2a^2b + b^2 - (a^4 + a^2b + ba + b^2) =$$

$$a^4 - 2a^2b + b^2 - a^4 - a^2b - ba - b^2 =$$

$$-2a^2b - a^3b - ba$$

$$\mathbf{R/ -a^3b - 2a^2b - ab}$$

$$5. (a - b)(2a + b) - (a - 3b)^2$$

$$(2a^2 + ab - 2ab - b^2) - (a^2 - 6ab + 9b^2) =$$

$$\underline{2}a^2 + \underline{a}b - \underline{2}ab - b^2 - a^2 + \underline{6}ab - 9b^2 =$$

$$a^2 + 5ab - 10b^2$$

$$\mathbf{R/ a^2 + 5ab - 10b^2}$$

$$6. (2m - 5n)^3 + (45m^5n^2 + 90m^3n^4) \div m^3n$$

$$\begin{array}{l} 1 \\ 1 \\ 1 \\ 2 \\ 3 \end{array} \left(8m^3 - 3 \cdot 4m^2 \cdot 5n + 3 \cdot 2m \cdot 25n^2 - 125n^3 \right) + \frac{45m^5n^2 + 90m^3n^4}{m^3n} =$$

$$8m^3 - 60m^2n + 150mn^2 - 125n^3 + 45m^2n + 90n^3 =$$

$$8m^3 - 15m^2n + 150mn^2 - 35n^3$$

$$\mathbf{R/ 8m^3 - 15m^2n + 150mn^2 - 35n^3}$$

Factorice al máximo las siguientes operaciones:

$$7. \quad 3(x-y)^2 - 2(x^2 - y^2) =$$

$$3(x-y)^2 - 2(x-y)(x+y) =$$

$$(x-y)[3(x-y) - 2(x+y)] =$$

$$(x-y)(3x - 3y - 2x - 2y) =$$

$$(x-y)(x - 5y)$$

$$R/(x-y)(x-5y)$$

$$8. \quad 9m^2 - n^2 - 16 - 8n$$

$$9m^2 + (-n^2 - 16 - 8n) =$$

$$9m^2 - (n^2 + 8n + 16) =$$

$$9m^2 - (n+4)^2 =$$

$$(3m - n - 4)(3m + n + 4)$$

$$R/(3m+n+4)(3m-n-4)$$

$$9. \quad 6y - 3x^2 - 6x + 3y^2$$

$$3(2y - x^2 - 2x + y^2) =$$

$$3[(2y-2x) + (y^2-x^2)]$$

$$3[2(y-x) + (y-x)(y+x)]$$

$$3(y-x)(2+y+x)$$

$$R/3(y-x)(y+x+2)$$

$$10. \quad 16x^3 - 4x$$

$$4x(4x^2 - 1)$$

$$4x(2x-1)(2x+1)$$

$$R/4x(2x+1)(2x-1)$$

$$11. \quad y^3 + 3y^2 + 2y + 6$$

$$(2y+y^2) + (3y^2+6) =$$

$$y(2+y^2) + 3(y^2+2) =$$

$$(y+3)(2+y^2)$$

$$R/(y+3)(y^2+2)$$

$$12. \quad 16x^4 - 72x^2y^2 + 81y^4$$

$$4x^2 \quad -56x^2y^2 \quad -9y^4$$

$$4x^2 \quad -9y^4$$

$$(4x^2 - 9y^2)^2 =$$

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

$$R/(2x+3y)^2(2x-3y)^2$$

$$13. \quad x^2(2+3x) + 4(-3x-2) =$$

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

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

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

$$R/(2+3x)(x+2)(x-2)$$

$$14. \quad x^6 - 4x^5 + 5x^4 - 5x^2 + 4x - 1$$

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

$$(x^2-x^2) - (x-1)(x-1)^2(x^4 - 2x^3 + 2x - 1) =$$

$$(x-1)^3(x^3 - x^2 - x + 1) \rightarrow (x-1)^4(x-1)(x+1)$$

$$x^2(x-1) - 1(x-1) \rightarrow (x-1)^2(x^2-x^2) + (x-1) \rightarrow (x-1)^2(x^2-x^2) + (x-1)$$

$$(x-1)^2(x^2-x^2) + (x-1) \rightarrow (x-1)^2(x^2-x^2) + (x-1)$$

$$(x-1)^2(x^2-x^2) + (x-1) \rightarrow (x-1)^2(x^2-x^2) + (x-1)$$

$$R/(x-1)^5(x+1)$$

$$15. \quad x^6 + 7x^3 - 8$$

$$x^3 \quad 8$$

$$x^3 \quad -1$$

$$R/(x+2)(x^2-2x+4)(x-1)(x^2+x+1)$$

$$(x^3+8)(x^3-1) =$$

$$(x+2)(x^2-2x+4)(x-1)(x^2+x+1)$$