SOLUCIONES POLINOMIOS: DESCOMPOSICIÓN FACTORIAL

1. Descomponer en factores:

a) $x^3 - 6x^2 + 9x =$ **$x\,(x-3)^2$**

b) $x^3 - x =$ **$x\,(x-1)\,(x+1)$**

c) $x^4 - 81x^2 =$ **$x^2\,(x+9)\,(x-9)$**

d) $x^3 + 2x^2 + x =$ **$2x\,(x+1)^2$**

e) $3x^3 - 27x =$ **$3x\,(x+3)\,(x-3)$**

f) f) $3x^2 + 30x + 75 =$ **$3\,(x+5)^2$**

g) $x^4 - 50x^2 + 625 =$ **$(x+5)^2\,(x-5)^2$**

h) $x^2 - 16 =$ **$(x-4)\,(x+4)$**

i) $x^4 - 6x^3 + 9x^2 =$ **$x^2\,(x-3)^2$**

j) $3x^3 - 3x =$ **$3x\,(x-1)\,(x+1)$**

k) $2x^4 + 12x^3 + 18x^2 =$ **$2x^2\,(x+3)^2$**

l) $5x^2 - 40x + 80 =$ **$5\,(x-4)^2$**

m) $3x^3 + 6x^2 + 3x =$ **$3x\,(x+1)^2$**

n) $x^4 - 9x^2 =$ **$x^2\,(x-3)\,(x+3)$**

o) $x^4 - 10x^2 + 9 =$ **$(x+1)\,(x-1)\,(x+3)\,(x-3)$**

2. Descomponer en factores e indicar cuáles son sus raíces:

a) $x^2 + 8x - 9 =$ **$(x-1)\,(x+9)$** Raíces: **1, –9**

b) $x^3 - x^2 + 9x - 9 =$ **$(x-1)\,(x^2+9)$** Raíz: **1**

c) $x^4 + x^2 - 20 =$ **$(x-2)\,(x+2)\,(x^2+5)$** Raíces: **2, –2**

d) $x^3 + x^2 - 5x - 5 =$ **$(x+1)\,(x-\sqrt{5}\,)\,(x+\sqrt{5}\,)$** Raíces: **$-1, \sqrt{5}, -\sqrt{5}$**

e) $x^4 - x^3 - 9x^2 + 3x + 18 =$ **$(x+2)(x-3)\,(x-\sqrt{3}\,)(x+\sqrt{3}\,)$** Raíces: **$-2, 3, -\sqrt{3}, \sqrt{3}$**

f) $x^4 - 81 =$ **$(x-3)\,(x+3)\,(x^2+9)$** Raíces: **3, –3**

g) $x^4 - x^2 =$ **$x^2\,(x-1)\,(x+1)$** Raíces: **0, 1, –1**

h) $x^3 + 3x^2 + 4x + 12 =$ **$(x+3)(x^2+4)$** Raíz: **–3**

i) $x^3 - 3x^2 =$ **$x^2\,(x-3)$** Raíces: **0, 3**

j) $x^3 - x^2 - 12x =$ **$x\,(x-4)\,(x+3)$** Raíces: **0, 4, –3**

k) $x^3 - 7x^2 + 14x - 8 =$ **$(x-1)\,(x-2)\,(x-4)$** Raíces: **1, 2, 4**

l) $x^4 - 4x^3 + 4x^2 - 4x + 3 =$ **$(x-1)\,(x-3)\,(x^2+1)$** Raíces: **1, 3**

3. Factorizar:

a) $x^2 - 6x - 7 =$ **$(x + 1)(x - 7)$**

b) $x^2 + 12x + 35 =$ **$(x - 5)(x + 7)$**

c) $4x^2 + 8x - 12 =$ **$4(x - 1)(x + 3)$**

d) $2x^3 + 2x^2 - 24x =$ **$2x(x - 3)(x + 4)$**

e) $x^4 + 9x^3 - 10x^2 =$ **$x^2(x - 1)(x + 10)$**

f) f) $3x^3 - 9x^2 - 30x =$ **$3x(x + 2)(x - 5)$**

g) $3x^2 + 2x - 8 =$ **$(x + 2)(3x - 4) = 3(x + 2)(x - 4/3)$**

h) $4x^2 + 17x + 15 =$ **$(x + 3)(4x + 5) = 4(x + 3)(x + 5/4)$**

i) $2x^2 - 9x - 5 =$ **$(x - 5)(2x + 1) = 2(x - 5)(x + 1/2)$**

j) $-x^2 + 17x - 72 =$ **$(x - 9)(-x + 8) = -1(x - 9)(x - 8)$**

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

l) $x^3 - x - 6 =$ **$(x - 2)(x^2 + 2x + 3)$**

m) $3x^4 + 15x^2 =$ **$3x^2(x^2 + 5)$**

n) $x^4 - 16 =$ **$(x - 2)(x + 2)(x^2 + 4)$**