Semana: #06 (IR)

FACTORIZACIÓN EN ℚ

Def:

polinomios → x factores primos.

Factor primo:

(No desintegrada)

- $x^2-1=(x+1)(x-1)$ NO F.P
- $x^3+1=(x+1)(x^2-x+1)$ NO F.P
- $x^4+x^2+1=(x^2+x+1)(x^2-x+1)$ NO F.P
- $x^2-2=(x+\sqrt{2})(x-\sqrt{2})$ (SI F.P)

Teorema:

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

- # factor primos = 3
- # divisores = 3.4.5 = 60
- # fact. algebraicos = 60+1 = 59

Ojo

F. Primos = F. Irreductible

F. Lineal = F. primo. $(ax+b)$

multiplicidad = repeticuá.

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

Métodos:

I. Factor común: (menor exp.)
(Agrupación términos)

II. Aspas: A. simple: 3
A. Doble: 6
A. D. Especial: 5

III. Identidades: - Argand
- dif. cuad.
- Syd. cubos.

IV. Divisores binómicos: (Paolo Ruffini)

V.N = DIV. T. IND / DIV. Coef. princ.

V. Artificios: - Quita y pon
- Descomp.
- Cambio variable.

01:

$P_{(x;y)} = x^{2} y^{1} (x+y^2)^{1} (z^2+1)$

f. primos = 3

div = 3.2.2 = 12

fact. alg = 11

Rpta: ①

02:

$x^2 y (z^3+1)(x+3)(x-y)(x+z^2)(x^2+1)$

f. primos = 6

f. p. cuadráticos = 1

x; y; $x+3$; $x-y$; $x+z^2$; x^2+1

03:

$$= x^5 + x^4yz + x^3y + x^2yz$$

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

$$= x^2y\{x^2(x+z) + 1(x+z)\}$$

$$= x^2y(x+z)(x^2+1)$$

fact. primos = (4)

04:

$$= 4x^4y - 4x^3y^2 - 24x^2y^3$$

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

$x \cdot x$; $-3y = -3xy$; $+2y = 2xy$; $-xy$

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

FFF(V)

$+x^2y^3$

$y^2)$

$y = -3xy$

$y = \underline{2xy}$

$-xy$

)

05:

$x - y = a$

$12(x-y)^2 + 7(x-y) - 12$

$12a^2 + 7a - 12$

$4a \quad -3 = -9a$

$3a \quad +4 = \underline{16a}$

$7a$

$= (4a-3)(3a+4)$

$= \underline{(4x-4y-3)(3x-3y+4)}$

$\#$ fatores primos: (2)

06:

$ab(x^2-y^2) + xy(a^2-b^2)$

$abx^2 - aby^2 + xya^2 - xyb^2$

$(abx^2 + xya^2) - (aby^2 + xyb^2)$

$ax(bx+ay) - by(ay+bx)$

$(ay+bx)(ax-by)$

Resposta: a)

04:

$P = x^8 - 1$

$P = (x^4+1)(x^4-1)$

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

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

#. fact. primos cuadráticos $= 1$

11:

$x^6 - x^2 - 8x - 16$

$x^6 - (x^2 + 8x + 16)$

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

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

#f. primos $= 2$

12: $3^{m+1} = b$

$R(m) = 3^{2m+2} - 3^{m+1} - 30$

$R = (3^{m+1})^2 - 3^{m+1} - 30$

$R = b^2 - b - 30$

$b \times -6$

$b \quad +5$

$R = (b-6)(b+5)$

$R = (3^{m+1} - 6)(3^{m+1} + 5)$

fact. primos = 2

14: $x^2 - 2x = A$

$(x+1)(x-3)(x+4)(x-6) + 38$

$(x^2-2x-3)(x^2-2x-24) + 38$

$(A-3)(A-24) + 38$

$A^2 - 27A + 110$

$A \times -22$

$A \quad -5$

$(A-22)(A-5)$

Rpta

$(x^2-2x-22)(x^2-2x-5)$

15:

ESTÁNDAR (15)

(6)

+38

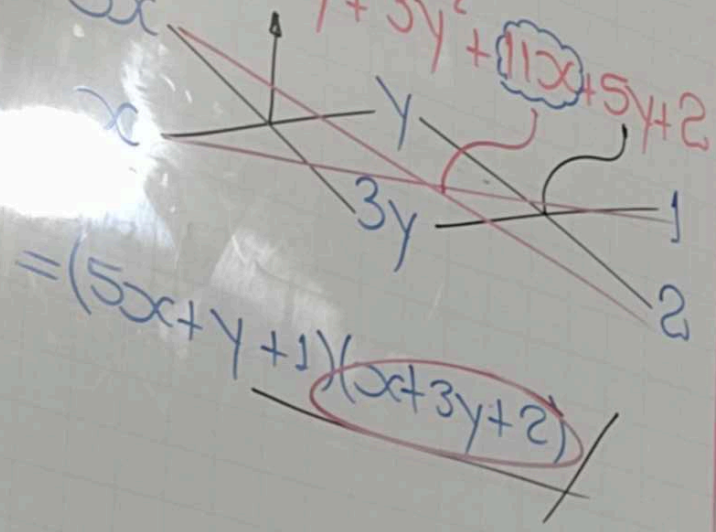
)+

38

38

15:

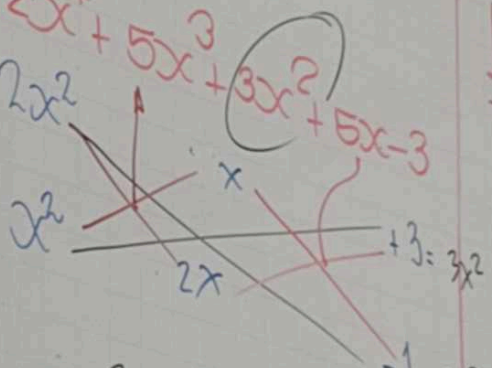
$5x^2+16xy+3y^2+11x+5y+2$



$=(5x+y+1)(x+3y+2)$

17: (A.O. especial)

$2x^4+5x^3+3x^2+5x-3$



$3x^2-x^2=2x^2$ (x, $2x$)

x^2

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

dy

* A. DOBLE: (3 A. Simples)

①	②	③	④	⑤	⑥
x^2	xy	y^2	x	y	L.IND

L)

$+5x-3$

$+3 = 3x^2$

$-1 = 2x^2$

x^2

x

$2x$

$-1)$

9:

x^4+2x^2+9

$x^4+0x^3+2x^2+0x+9$

x^2 x^2 $-2x$ $2x$ 3 3

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

2 πλευρ. x^2

9:

$=(2x^2+3)^3+4x^2(x^2+3)-10x^2-3$

$=(2x^2+3)^3+4x^4+12x^2-10x^2-3$

$=(2x^2+3)^3+4x^4+12x^2+9-10x^2-12$

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

$=p^3+p^2-5p+3$

	1	1	-5	3
1		1	2	-3
	1	2	-3	0
1		1	3	
	1	3	0	

$2x^2+3=p$

$3(x^2+1)^2(x^2+3)$

$1+3=4$

$=(p-1)^2(p+3)$

$=(2x^2+2)^2(2x^2+6)$