

Semana: #07

MCD Y MCM

Def. polinomios $\xrightarrow{\text{factorizar}}$ mcd y mcm.

MCD: F. primos en común,
Elevados a su menor expon.

MCM: Todos f. primos,
Elevados a su mayor expon.

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

$$Q = 10x^2(x-1)^3$$

$$\begin{array}{r|l} 4 & 10 \\ 2 & 5 \\ 1 & 5 \\ 1 & 1 \end{array}$$

$$\bullet \text{ MCD}_{P,Q} = 2x^2$$

$$\bullet \text{ MCM}_{P,Q} = 20x^3(x+1)^2(x-1)^3$$

Prop: A y B polinomios.

$$1) A \times B = \text{mcd} \cdot \text{mcm}$$

$$2) \frac{A}{\text{mcd}} \vee \frac{B}{\text{mcd}} \text{ div. exactas.}$$

$$3) \frac{\text{mcm}}{A} \vee \frac{\text{mcm}}{B} \text{ div. exactas.}$$

$$4) A \vee B \text{ PEST} \begin{cases} \text{mcd} = 1 \\ \text{mcm} = A \times B \end{cases}$$

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

$$Q = 10x^2(x-1)^3$$

$$\begin{array}{r|l} 4 & 10 \\ 2 & 5 \\ 1 & 5 \end{array}$$

$$\text{MCD}_{(P,Q)} = 2x^2$$

$$\text{MCM}_{(P,Q)} = 20x^3(x+1)^2(x-1)^3$$

Prop: A, B polinomios.

$$1) A \times B = \text{med. mcm}$$

$$2) \frac{A}{\text{med}} \vee \frac{B}{\text{med}} \text{ div. exactas.}$$

$$3) \frac{\text{mcm}}{A} \vee \frac{\text{mcm}}{B} \text{ div. exactas.}$$

$$4) A, B \text{ pssi} \begin{cases} \text{med} = 1 \\ \text{mcm} = A \cdot B \end{cases}$$

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

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

$$A = 48a^{n+1}b^{m-2}c^n$$

$$B = 30a^n b^{m-2}$$

$$C = 72a^{n-1}b^{m-1}c^{n-2}$$

$$\text{MCD} = \beta a^1 b^2$$

$$\text{MCM} = 720a^3 b^3 c^2$$

$$\text{MCD} = 6a^{n-1}b^{m-2}$$

$$\begin{array}{l|l} 48 & 30 & 72 & 2 \\ 24 & 15 & 36 & 3 \\ 8 & 5 & 12 & 4 \\ 2 & 5 & 3 & 3 \\ & & & 2 \\ & & & 5 \end{array}$$

Q2:

$$A = x^6 - x^2$$

$$B = x^3 - 3x^2 + 2x$$

$$C = 2x^4 - x^3 - 3x^2$$

$$\text{MCM} = x^2(x^2+1)(x+1)(x-1)(x-2)(2x-3)$$

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

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

$$B = x(x^2-3x+2) \text{ #f.p.l.} =$$

$$B = x(x-2)(x-1)$$

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

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

04:

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

$$\checkmark B = x^2 + 4x + 3 = (x+1)(x+3)$$

$$C = x^4 - 10x^2 + 9 = (x^2-9)(x^2-1)$$

$$D = x^3 - 9x + x^2 - 9$$

$$MCM = (x-3)(x-1)(x+3)(x+1)$$

$$\checkmark C = (x+3)(x-3)(x+1)(x-1)$$

$$D = (x^3 + x^2) - (9x + 9)$$

$$D = x^2(x+1) - 9(x+1)$$

$$\therefore MCM = (4)$$

$$\checkmark D = (x+1)(x+3)(x-3)$$

05:

$$A = x^3 - 3x + 2$$

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

$$MCD = (x-1)^2$$

$$A = \frac{x^3 - x - 2x + 2}{x(x^2-1)}$$

$$A = \frac{x(x+1)(x-1) - 2(x-1)}{x(x+1)(x-1)}$$

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

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

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

$$\frac{\Sigma \text{res} = 0}{\text{---}}$$

07:

$$P =$$

$$Q =$$

$$MCM$$

$$MC$$

$$P =$$

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

$$MCM$$

$$MC$$

$$M$$

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

$$2(x-1)$$

$$\sum \text{coef} = 0$$

07:

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

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

$$\text{MCM} = x^3 - x^2 - 9x + 9$$

$$\text{MCD} =$$

$$P \times Q = \text{mcd} \cdot \text{mcm}$$

$$(x+3)(x-1)(x+3) = \text{mcd} \cdot (x-1)(x+3)(x+3)$$

$$(x-1) = \text{mcd}$$

$$\text{MCM} = x^2(x-1) - 9(x-1)$$

$$\text{MCM} = (x-1)(x^2 - 9)$$

$$\text{MCM} = (x-1)(x+3)(x-3)$$

15:

$$P \times N = (x^6 + 1)^2 - 4x^6$$

$$\frac{\text{mcm}}{\text{mcd}} = (x^2 + 1)^2 - 4x^2$$

$$\text{MCD} =$$

$$P \times N = \text{mcd} \times \text{mcm}$$

$$(x^6 + 1)^2 - (2x^3)^2 = \text{mcd}^2 \{ (x^2 + 1)^2 - 4x^2 \}$$

$$(x^6 + 2x^3 + 1)(x^6 - 2x^3 + 1) = \text{mcd}^2 (x^2 + 1)(x^2 - 1)$$

$$(x^3 + 1)^2 (x^3 - 1)^2 = \text{mcd}^2 (x+1)(x-1)$$

$$(x+1)(x^2 - x + 1)(x-1)(x^2 + x + 1) = \text{mcd} (x+1)(x-1)$$

$$(x^4 + x^2 + 1) = \text{mcd}$$

$$\text{Rpta: } (x^4 + x^2 + 1)$$

$$-3$$

08:

$$\frac{MCM}{MCD} = \frac{4 \cdot 3 \cdot 2 \cdot 2}{x+3}$$

$$A = x^2 + 5x + 6$$

$$B = 2x^2 + 12x + 18 = 2(x^2 + 6x + 9)$$

$$C = 4x^2 + 4x - 24 = 4(x^2 + x - 6)$$

$$A = (x+3)(x+2)$$

$$B = 2(x+3)^2 \therefore LIND = 48$$

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

10:

$$P = ax^2 + 3x - b$$

$$Q = ax^2 - 7x + b$$

$$MCD = (x-2) \checkmark$$

$$a+b = 11$$

$ax^2 + 3x - b$	$ax^2 - 7x + b$
$x \quad -2$	$x \quad -2$
$x \quad +5$	$x \quad -5$

$$a = 1$$

$$b = 10$$

11: $P = x^7 - x$

$Q = x^5 - x$

$R = x^4 - x$

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

$P = x(x^6-1)$ #f.p.l = ③

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

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

$Q = x(x^4-1)$

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

$R = x(x^3-1)$

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

12:

$A = 2x^3 - x^2 + 3x +$

$B = x^3 + x^2 + n$

$MCD = x^2 - x + 2$

$m+n = 6$

HORNER:

1	2	-1	3	m
1		2	-4	
-2			1	-2
	2	1	0	0

1	1	1	0	n
1		1	-2	
-2			2	-4
	1	2	0	0

$$x^3 - x^2 + 3x + m$$

$$3 + x^2 + n$$

$$2x + 2$$

$$3 \quad 2$$

$$4 \quad (m)$$

$$1 \quad -2$$

$$0 \quad 0$$

$$(n)^4$$

$$4$$

$$0$$

14:

$$A = x(x+1)(x-2)(x-1) - 24$$

$$B = x^3 - 3x + 2 \quad x = -2$$

$$MCD = x + 2 = 0$$

$$x^2 - x = p$$

$$A = (x^2 - x)(x^2 - x - 2) - 24$$

$$A = p(p - 2) - 24$$

$$A = p^2 - 2p - 24 = (p - 6)(p + 4)$$

$$A = (x^2 - x - 6)(x^2 - x + 4)$$

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

$$B = x^3 - x - 2x + 2$$

$$B = x(x+1)(x-1) - 2(x-1)$$

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

Hombre:

$$26: N = (x^2 - 9)^2(x+2)$$

$$MCD = x^2 + 5x + 6$$

$$\sqrt{MCM} = x^4 - 13x^2 + 36$$

$$P \times N = mcd \times mcm.$$

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

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

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

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

Mujer:

29:

Mujer:

29:

$$A = 2x^3 - x^2 + 3x + a$$

$$B = x^3 + x + b$$

$$MCD = x^2 - x + 2$$

1	2	(-1)	3	a
1		2	-4	
-2			1	-2
	2	1	0	0

1	1	(0)	1	b
1		1	-2	
-2			1	-2
	1	1	0	-1
				7
				-4
				-23

$$MCM = (x-1)(x+2)(x-4)(x+m-2)$$

$$\left(\frac{1}{a}\right)^{\frac{1}{b}-2} = \left(\frac{1}{2}\right)^{\frac{1}{2}-2} = \left(\frac{1}{2}\right)^{\frac{3}{2}} = \frac{1}{2\sqrt{2}}$$

Naum:

$$22: x^2 - 6x + 8$$

$$A = (x-1)(x+3)(x-4)$$

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

$$MCM = \dots -24$$

$$MCD = (x-1)(x+3)$$

$$MCD = x^2 + 2x - 3$$

1	1	(-2)	a	b
-2		-2	3	M=0
3			8	-12
	1	-4	0	0

1	1	(m)	p	q
-2		-2	3	

1	m-2	0	0
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$$(x/n)(x/i)$$

$$-3$$