

b. $\frac{x^2-2}{x^2-4} - \frac{x-1}{x-2} = \dots\dots\dots 1'5 \text{ punts}$

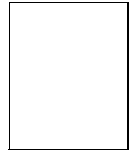
$$\frac{x^2-2}{(x-2)(x+2)} - \frac{x-1}{x-2} = \frac{x^2-2}{(x-2)(x+2)} - \frac{(x-1)(x+2)}{(x-2)(x+2)} = \frac{x^2-2-x^2-x+2}{(x-2)(x+2)} = \frac{-x}{(x-2)(x+2)} = \frac{-x}{x^2-4}$$

c. $\frac{x^2+6x+9}{x+3} : \frac{x^2-6x+9}{x^2-9} = \dots\dots\dots 1'5 \text{ punts}$

$$\frac{(x+3)^2}{x+3} : \frac{(x-3)^2}{(x+3)(x-3)} = \frac{(x+3)^2 \cancel{(x+3)} \cancel{(x-3)}}{\cancel{(x+3)} (x-3)^2} = \frac{(x+3)^2}{x-3}$$

B

Examen de Matemàtiques Aplicades a les Ciències Socials I



Nom _____ Data: _____

Nota

1. Calcula $3x^2 \cdot (2x-5)^2 \cdot (3x^2+2) = \dots\dots\dots$ 1'5 punts

$$3x^2 \cdot (2x-5)^2 \cdot (3x^2+2) = 3x^2(4x^2-20x+25)(3x^2+2) = (12x^4-60x^3+75x^2)(3x^2+2) = 36x^6-180x^5+249x^4-120x^3+150x^2$$

2. Divideix $(x^5+4x^3-7x+4) : (x^3-2x+1) \dots\dots\dots$ 1'5 punts

$$\begin{array}{r} x^5 \quad +4x^3 \quad -7x \quad +4 \quad | \quad x^3-2x+1 \\ -x^5 \quad +2x^3 \quad -x^2 \quad \quad \quad | \quad x^2+6 \\ \hline / \quad +6x^3 \quad -x^2 \quad -7x \quad +4 \\ \quad -6x^3 \quad +12x \quad -6 \\ \hline / \quad -x^2 \quad +5x \quad -2 \end{array}$$

3. Calcula el valor de $P(x) = 2x^6 - 6x^5 + 3x^2 - 5x$ per a $x = -2 \dots\dots\dots$ 1 punt

	2	6	0	0	3	-5	0
-2		-4	20	-40	80	-166	342
	2	-10	20	-40	83	-171	342

$P(-2) = 342$

També: $P(-2) = 2(-2)^6 - 6(-2)^5 + 3(-2)^2 - 5(-2) = 342$

4. Factoritza $6x^6 - 21x^4 - 12x^2 = \dots\dots\dots$ 1'5 punts

$6x^6 - 21x^4 - 12x^2 = 3x^2(2x^4 - 7x^2 - 4)$

	2	0	-7	0	-4
2		4	8	2	4
	2	4	1	2	0
-2		-4	0	-2	
	2	0	1	0	

$2x^2+1=0 \rightarrow x = \pm \sqrt{\frac{-1}{2}} = \cancel{\text{A}} \text{ solució}$

$6x^6 - 21x^4 - 12x^2 = 3x^2(x-2)(x+2)(2x^2+1)$

5. Calcula i simplifica

a. $\frac{1}{x+2} - x + \frac{x^2-1}{x} = \dots\dots\dots$ 1'5 punts

$$\begin{aligned} \frac{1}{x+2} - x + \frac{x^2-1}{x} &= \frac{x}{x(x+2)} - \frac{x^2(x+2)}{x(x+2)} + \frac{(x^2-1)(x+2)}{x(x+2)} = \frac{x}{x(x+2)} - \frac{x^3+2x^2}{x(x+2)} + \frac{x^3+2x^2-x-2}{x(x+2)} \\ &= \frac{\cancel{x} - \cancel{x^3} - 2\cancel{x^2} + \cancel{x^3} + 2\cancel{x^2} - \cancel{x} - 2}{x(x+2)} = \frac{-2}{x(x+2)} \end{aligned}$$

b. $\frac{x+1}{x-3} - \frac{x^2+3}{x^2-9} = \dots\dots\dots 1'5$ punts

$$\frac{(x+1)(x+3)}{(x-3)(x+3)} - \frac{x^2+3}{(x-3)(x+3)} = \frac{x^2+4x+3}{(x-3)(x+3)} - \frac{x^2+3}{(x-3)(x+3)} = \frac{\cancel{x^2}+4x+\cancel{3} - \cancel{x^2} - \cancel{3}}{(x-3)(x+3)} = \frac{4x}{(x-3)(x+3)}$$

c. $\frac{x^2+6x+9}{x-2} : \frac{x^2+5x+6}{x^2-4} = \dots\dots\dots 1'5$ punts

$$\frac{(x+3)^2}{x-2} : \frac{\cancel{(x+2)}(x+3)}{\cancel{(x+2)}(x-2)} = \frac{(x+3)^2 \cancel{(x-2)}}{\cancel{(x-2)}(x+3)} = x+3$$