

①  $(4x^4 - 7x^3 + mx^2 + 21x - 36) \div (x-3) ?$

	4	-7	m	21	-36	
3		12	15	-9	+36	
	4	5	-3	+12	0	

$m + 15 = -3 \quad m = -3 - 15 \quad \boxed{m = -18}$

$x^6 + 4x^5 + 2x^4 - 3x^3 - 9x^2 - 37x - 30 = 0$

	1	4	2	-3	-9	-37	-30	
-1		-1	-3	+1	+2	+7	+30	
	1	3	-1	-2	-7	-30	0	
-2		-2	-2	+6	-8	+30		
	1	1	-3	+4	-15	0		
-3		-3	+6	-9	+15			
	1	-2	+3	-5	0			

$$\begin{array}{r|l}
 x^6 + 4x^5 + 2x^4 - 3x^3 - 9x^2 - 37x - 30 & (x+1) \\
 x^5 + 3x^4 - x^3 - 2x^2 - 7x - 30 & (x+2) \\
 x^4 - x^3 - 3x^2 + 4x - 15 & (x+3) \\
 x^3 - 2x^2 + 3x - 5 &
 \end{array}$$

$$x^6 + 4x^5 + 2x^4 - 3x^3 - 9x^2 - 37x - 30 = (x+1)(x+2)(x+3) \cdot (x^3 - 2x^2 + 3x - 5)$$

$$x+1=0 \quad x=-1$$

$$x+2=0 \quad x=-2$$

$$x+3=0 \quad x=-3$$

$$x^3 - 2x^2 + 3x - 5 = 0 \quad \text{No tiene solución}$$

$$\begin{array}{r}
 \textcircled{3} \quad 4x^4 + 2x^3 - 2x^2 + 9x + 5 \\
 \hline
 \cancel{-4x^4} \quad \quad \quad + 2x^3 - 10x \\
 \hline
 \quad \quad \quad + 2x^3 \quad \quad \quad - x + 5 \\
 \hline
 \quad \quad \quad \cancel{-2x^3} \quad \quad \quad + x \quad \quad \quad \cancel{-5} \\
 \hline
 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad 0
 \end{array}
 \quad \left| \begin{array}{l}
 -2x^3 + x - 5 \\
 \hline
 -2x - 1
 \end{array} \right.$$

$$a) \left( \frac{1}{x-1} - \frac{2x}{x^2-1} \right) \div \frac{x}{x+1} =$$

$$x-1 \rightarrow x-1$$

entouces

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

$$\left( \frac{(x+1) - 2x}{(x-1)(x+1)} \right) \div \frac{x}{x+1} = \left( \frac{x+1-2x}{(x+1)(x-1)} \right) \div \frac{x}{x+1} =$$

$$= \frac{1-x}{(x+1)(x-1)} \div \frac{x}{x+1} = \frac{(1-x) \cdot \cancel{(x+1)}}{\cancel{(x+1)}(x-1) \cdot x} = \frac{-\cancel{(x-1)}}{\cancel{(x-1)}x} = \frac{-1}{x}$$

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

$$b) \frac{x+1}{x-1} + \frac{x+1}{x+2} \cdot \left( 1 + \frac{1}{x+1} - \frac{x^2-x-6}{x^2-2x-3} \right)$$

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

$$x+1 = x+1$$

	1	-2	-3
-1		-1	+3
	1	-3	0
		3	
3	1	0	0
			③

$$\frac{x+1}{x-1} + \frac{x+1}{x+2} \cdot \left( \frac{x^2 - 2x - 3 + (x-3) - x^2 + x + 6}{x^2 - 2x - 3} \right)$$

$$= \frac{x+1}{x-1} + \frac{x+1}{x+2} \cdot \left( \frac{\cancel{x^2} - \cancel{2x} - \cancel{3} + \cancel{x} - \cancel{3} - \cancel{x^2} + \cancel{x} + \cancel{6}}{x^2 - 2x - 3} \right)$$

$$= \frac{x+1}{x-1} + \frac{x+1}{x+2} \cdot 0 = \frac{x+1}{x-1}$$

$$\textcircled{5} \text{ A) } (2y+x)(2y-x) + (x+y)^2 - x(x+3) =$$

$$= 4y^2 - x^2 + x^2 + y^2 + 2xy - xy - 3x =$$

$$= 5y^2 + \cancel{2x^2} + 2xy - 3x$$

$$\text{B) } (2y+x+1) \cdot (x-2y) - (x+2y)(x-2y) =$$

$$= \cancel{2yx} - 4y^2 + x^2 - \cancel{2yx} + x - 2y - \cancel{x^2} - 4y^2 =$$

$$= x - 2y - 8y^2$$

$$\textcircled{6} \quad 16x^2 + 1 - 8x = (4x-1)^2$$

$$9x^4 + y^2 + 6x^2y = (3x^2 + y)^2$$