① **PRODUCTO DE RAÍCES:** CONTROL I. SHIRLEY SACASQUI IET.

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

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

R: $x \neq -1, 1$

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

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

$$0 = \frac{(x+4)(x-1)+2x(x+1)-(2x+3)(x-1)}{2(x+1)(x-1)}$$

$$0 = (x-1)(\overbrace{\cancel{x}+4-2\cancel{x}+3}^{-x+7}) + 2x^2+2$$

$$0 = \cancel{-x^2}+7x+x-7+\cancel{2x^2}+2$$

$$0 = x^2+8x-5$$

$a=1$, $b=8$; $c=-5$

$$x = \frac{-8 \pm \sqrt{64-(-20)}}{2(1)}$$

$$x = -4 \pm \sqrt{21}$$

$$x_1 \cdot x_2 = (-4+\sqrt{21})(-4-\sqrt{21})$$

$$= 16+\cancel{4\sqrt{21}}-\cancel{4\sqrt{21}}-21$$

$$x_1 \cdot x_2 = -5$$

DESIGUALDAD　　　　　　　　CONTROL I : SHIRLEY SACASQUI　　I.E.T.

2) $$\frac{(x^2+x-2)^4\,(x^2-9)^5}{(4+x^2)^5\,(x-2x-3)} < 0$$

$$\frac{\big((x+2)(x-1)\big)^4\,(x+3)^5(x-3)^5}{(2^2+x^2)^5\,(-x-3)} < 0$$

$$\frac{(x+2)^4(x-1)^4\,(x+3)^5(x-3)^5}{(x^2+2^2)^5-(x+3)} < 0$$

$$\frac{(x+2)^4(x-1)^4\,\cancel{(x+3)}^5\,(x-3)^5}{(x^2+2^2)^5\,\cancel{(x+3)}} > 0$$

R : $x \neq -3, -2, 1, 3$　　$x^2+4=0$　　$x+2=0$

$x^2=-4$　　$x=-2$

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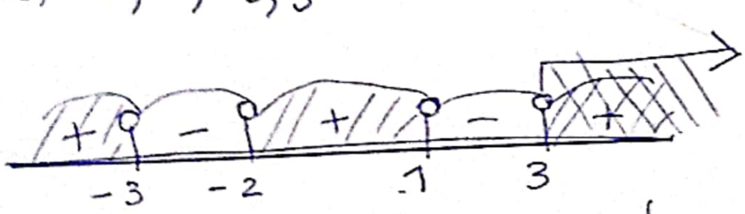
$$\frac{(x+2)^4\,(x-1)^4\,(x+3)^4\,(x-3)^5}{(x^2+2^2)^5} > 0 \quad \Rightarrow \frac{(-)}{(-)}\ \frac{(+)}{(+)}$$

$(x+2)^4\,(x-1)^4\,(x+3)^4\,(x-3)^5 > 0$　　　$(x-3)^5 > 0 \Leftrightarrow$

Pc; $-2,\ 1,\ -3,\ 3$　　　$x-3>0$

$x>3$



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$x<3$ y $(x^2+2^2)^5<0$ ó $x>3$ y R.

$x^2 < -(2^2)$

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