

1) Resolver la siguiente inecuación: $x^3 - 8x^2 + 17x < 10$ 10pts

$$1x^3 - 8x^2 + 17x - 10 < 0$$

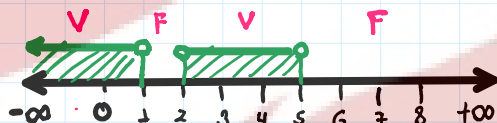
M. Ruffini:

1	1	-8	17	-10
	1	1	-7	10
2	1	-7	10	0
	2	2	-10	
5	1	-5	0	
	5	5		
	1	0		

$$(x-1)(x-2)(x-5) < 0$$

$$x-1=0; x-2=0; x-5=0$$

$$x=1; x=2; x=5$$



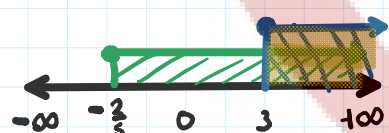
* Para $x = -4$
 $(-4-1)(-4-2)(-4-5) < 0$
 $(-5)(-6)(-9) < 0$
 $- < 0$ (V)

$$Cs:]-\infty, 1[\cup]2, 5[$$

2) Resolver la siguiente ecuación: $|5x+2| - |x-3| = 7$ 10pts

$$|x| \begin{cases} x \geq 0 & \text{ii) } ++ \\ & \text{iii) } +- \\ & \text{iv) } -+ \\ & \text{v) } -- \end{cases}$$

i) $5x+2 \geq 0 \wedge x-3 \geq 0$
 $5x \geq -2 \wedge x \geq 3$
 $x \geq -\frac{2}{5} \wedge x \geq 3$



$$Cs: [3, +\infty[$$

$$(5x+2) - (x-3) = 7$$

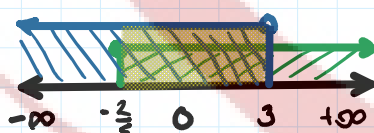
$$5x+2 - x+3 = 7$$

$$4x+5 = 7$$

$$4x = 2$$

$$x = \frac{1}{2}$$

ii) $5x+2 \geq 0 \wedge x-3 < 0$
 $5x \geq -2 \wedge x < 3$
 $x \geq -\frac{2}{5} \wedge x < 3$



$$Cs: [-\frac{2}{5}, 3[$$

$$(5x+2) - (-x+3) = 7$$

$$5x+2 + x-3 = 7$$

$$6x-1 = 7$$

$$6x = 8$$

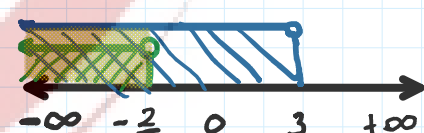
$$x = \frac{4}{3}$$

iii) $5x+2 < 0 \wedge x-3 \geq 0$
 $5x < -2 \wedge x \geq 3$
 $x < -\frac{2}{5} \wedge x \geq 3$



$$Cs: \emptyset$$

iv) $5x+2 < 0 \wedge x-3 < 0$
 $5x < -2 \wedge x < 3$
 $x < -\frac{2}{5} \wedge x < 3$



$$Cs:]-\infty, -\frac{2}{5}[$$

$$(-5x-2) - (-x+3) = 7$$

$$-5x-2 + x-3 = 7$$

$$-4x-5 = 7$$

$$-4x = 12$$

$$x = -3$$

$$Cs: \{-3, \frac{4}{3}\}$$

3) Resolver la siguiente inecuación en valor absoluto: $\left| \frac{2x-5}{x+2} \right| \leq 1$

Teorema $|x| \leq a, a > 0 \Leftrightarrow -a \leq x \leq a$

$$-1 \leq \frac{2x-5}{x+2} \leq 1$$

$$-1 \leq \frac{2x-5}{x+2} \quad \wedge \quad \frac{2x-5}{x+2} \leq 1$$

$$-1 - \frac{2x-5}{x+2} \leq 0 \quad \wedge \quad \frac{2x-5}{x+2} - 1 \leq 0$$

$$\frac{2x-5}{x+2} + \frac{1}{1} \geq 0 \quad \wedge \quad \frac{2x-5}{x+2} - 1 \leq 0$$

$$\frac{2x-5+x+2}{x+2} \geq 0 \quad \wedge \quad \frac{2x-5-x-2}{x+2} \leq 0$$

$$\star \quad \frac{3x-3}{x+2} \geq 0 \quad \wedge \quad \frac{x-7}{x+2} \leq 0 \quad \text{Si } x \neq -2$$

Para Numerador

$$\begin{aligned} 3x-3 &= 0 \\ 3x &= 3 \\ \bullet \quad x &= 1 \end{aligned}$$

Para Numerador

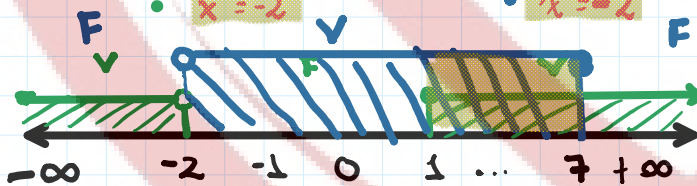
$$\begin{aligned} x-7 &= 0 \\ \bullet \quad x &= 7 \end{aligned}$$

Para Denominador

$$\begin{aligned} x+2 &= 0 \\ \bullet \quad x &= -2 \end{aligned}$$

Para Denominador

$$\begin{aligned} x+2 &= 0 \\ \bullet \quad x &= -2 \end{aligned}$$



Para: $x = 7$

$$\frac{3(7)-3}{7+2} \geq 0$$

$$\frac{18}{9} \geq 0$$

$$2 \geq 0 \quad (\checkmark)$$

Para $x = -1$

$$\frac{(-1)-7}{(-1)+2} \leq 0$$

$$\frac{-8}{1} \leq 0$$

$$-8 \leq 0 \quad (\checkmark)$$

$$Cs: [-1, 7]$$