Disequazioni di grado superiore al secondo

n. 327 $\quad 8x^3 - 8x^2 + 4x - 4 > 0$

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

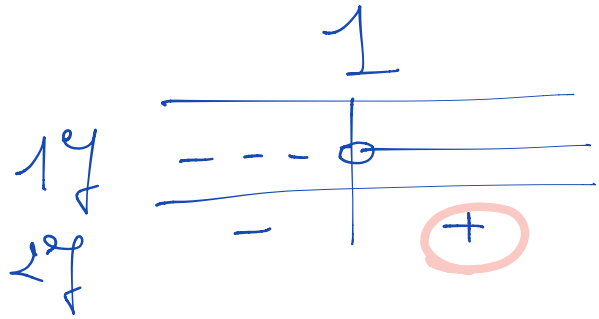
$$2x^3 - 2x^2 + x - 1 > 0$$

$$2x^2(x-1) + (x-1) > 0$$

$$(x-1)(2x^2+1) \boxed{> 0}$$

1° f: $x - 1 > 0$; $x > 1$

2° f: $2x^2 + 1 > 0 \quad \forall x \in \mathbb{R}$



$x > 1$

n. 338 $9x^4 - 145x^2 + 16 > 0$

$x^2 = z$

$9z^2 - 145z + 16 > 0$

DICE

$9z^2 - 145z + 16 = 0$

$\Delta = 21025 - 576 = 20449 =$
$= 143^2$

$z_{1,2} = \frac{145 \pm 143}{18}$ $\rightarrow z_1 = 1/9$, $\rightarrow z_2 = 16$

$z < \frac{1}{9} \vee z > 16$

$x^2 < \frac{1}{9} \vee x^2 > 16$

$-\frac{1}{3} < x < \frac{1}{3} \vee x < -4 \vee x > 4$

$S: x < -4 \vee -\frac{1}{3} < x < \frac{1}{3} \vee x > 4$

n. 366 $\quad 2x^4 - x^3 + x^2 - x - 1 \geq 0$

	2	-1	1	-1	-1
1		2	1	2	1
	2	1	2	1	//

$$(x-1)(2x^3+x^2+2x+1) \geq 0$$

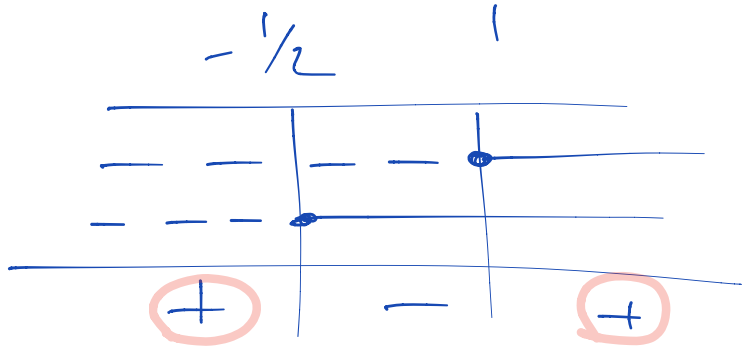
$$(x-1)\left[2x(x^2+1)+(x^2+1)\right] \geq 0$$

$$(x-1)(2x+1)(x^2+1) \geq 0$$

1° f : $x \geq 1$

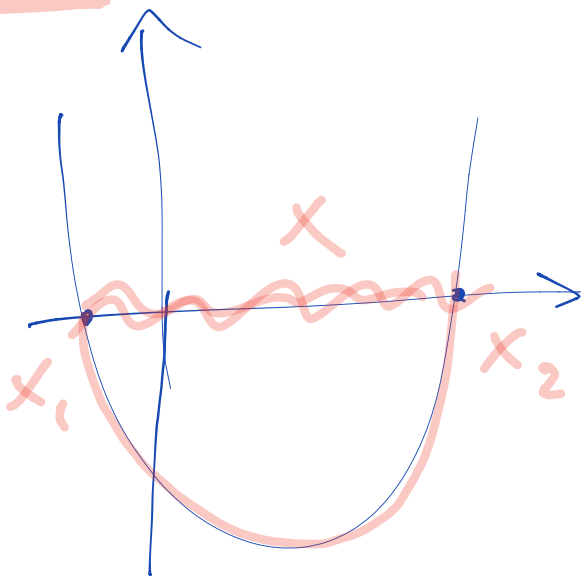
2° f : $x \geq -1/2$

3° f : $\forall x \in \mathbb{R}$



$$x \leq -\frac{1}{2} \vee x \geq 1$$

$$3x^2 - 4x - 7 < 0$$



$$\frac{x^2-3x-4}{x^2-7x+6} \boxed{\geq 0}$$

n. 602

$N \geq 0$ | $x^2-3x-4 \boxed{\geq} 0$

$(x-4)(x+1) \geq 0$

$x \leq -1 \vee x \geq 4$

$D > 0$ | $x^2-7x+6 \boxed{>} 0$

$(x-6)(x-1) > 0$

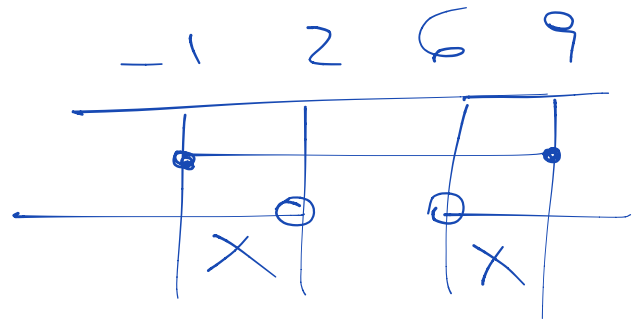
$x < 1 \vee x > 6$

		-1		1		4		6	
N		0	$-$		$-$	0			
D				0	$-$		$-$	0	
	$+$		$-$		$+$		$-$		$+$

$x \leq -1 \vee 1 < x \leq 4 \vee x > 6$

$$\begin{cases} ① \; x^2 - 8x - 9 \leq 0 \\ ② \; x^2 - 8x + 12 > 0 \end{cases}$$

$$\begin{cases} -1 \leq x \leq 9 \\ x < 2 \vee x > 6 \end{cases}$$



$$-1 \leq x < 2 \vee 6 < x \leq 9$$