

$$(4-x^2)(2x^2-4x) > 0$$

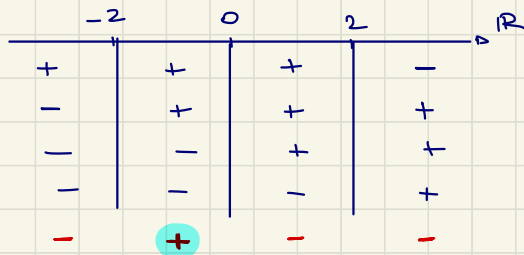
$$(2-x)(2+x)(2x)(x-2) > 0$$

$$\text{I)} \quad 2-x > 0 \quad \rightsquigarrow \quad x < 2$$

$$\text{II)} \quad 2+x > 0 \quad \rightsquigarrow \quad x > -2$$

$$\text{III)} \quad 2x > 0 \quad \rightsquigarrow \quad x > 0$$

$$\text{IV)} \quad x-2 > 0 \quad \rightsquigarrow \quad x > 2$$



Sol: $-2 < x < 0$
 $(-2, 0)$

Es 414: $x^5 - 25x^3 < 0$

$$x^3(x^2-25) < 0$$

$$x^3(x-5)(x+5) < 0$$

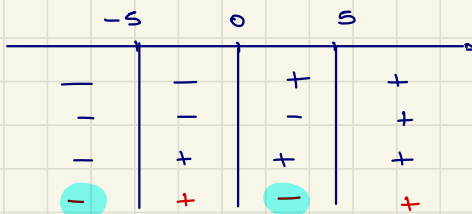
$$x \cdot x \cdot x (x-5)(x+5) < 0$$

$$\text{I)} \quad x^3 > 0 \quad \rightsquigarrow \quad x > 0$$

Poiché con exp dispari
il segno non cambia

$$\text{II)} \quad x-5 > 0 \quad \rightsquigarrow \quad x > 5$$

$$\text{III)} \quad x+5 > 0 \quad \rightsquigarrow \quad x > -5$$



Sol: $x < -5 \vee 0 < x < 5$
 $(-\infty, -5) \cup (0, 5)$

Disuguaglianze con exp pari o dispari:

Dispari $k \in \mathbb{N}$

| | | |
|---|--|---|
| $x^{2k+1} > 0 \rightsquigarrow x > 0$ | | Poiché elevare a num dispari non cambia di segno |
| $x^{2k+1} \geq 0 \rightsquigarrow x \geq 0$ | | |
| $x^{2k+1} < 0 \rightsquigarrow x < 0$ | | |
| $x^{2k+1} \leq 0 \rightsquigarrow x \leq 0$ | | |

Peri : ^{n ∈ N}

$$\begin{array}{llll} x^{2n} > 0 & \rightsquigarrow & \forall x \in \mathbb{R}, x \neq 0 \\ x^{2n} \geq 0 & \rightsquigarrow & \forall x \in \mathbb{R} \\ x^{2n} < 0 & \rightsquigarrow & \text{Mai} \\ x^{2n} \leq 0 & \rightsquigarrow & x = 0 \end{array}$$

Perché ogni num. $\neq 0$ al quadrato è positivo

Es 411 pag 594

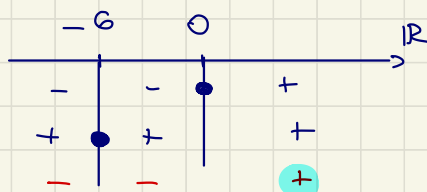
$$x^5 + 12x^4 + 36x^3 \geq 0$$

$$x^3(x^2 + 12x + 36) \geq 0$$

$$x^3(x+6)^2 \geq 0$$

$$\text{I) } x^3 \geq 0 \rightsquigarrow x \geq 0$$

$$\text{II) } (x+6)^2 \geq 0 \rightsquigarrow \forall x \in \mathbb{R} \\ \text{escluso } x = -6$$



$$\text{Sol : } x \geq 0 \quad x = -6 \\ (0, +\infty) \cup \{x = -6\}$$