$$\lim_{x \to 1} 2x^2 - 1 = 1$$

$\forall \varepsilon > 0 \ \exists \ I_\varepsilon(1)$ e corrispondentemente

$\exists \ \sigma > 0, \ I_\sigma(1) \mid \forall x \in I_\sigma(1)$ si ha

$$|2x^2 - 1 - 1| < \varepsilon$$

$$|2x^2 - 2| < \varepsilon \Rightarrow \begin{cases} 2x^2 - 2 < \varepsilon \\ 2x^2 - 2 > -\varepsilon \end{cases}$$

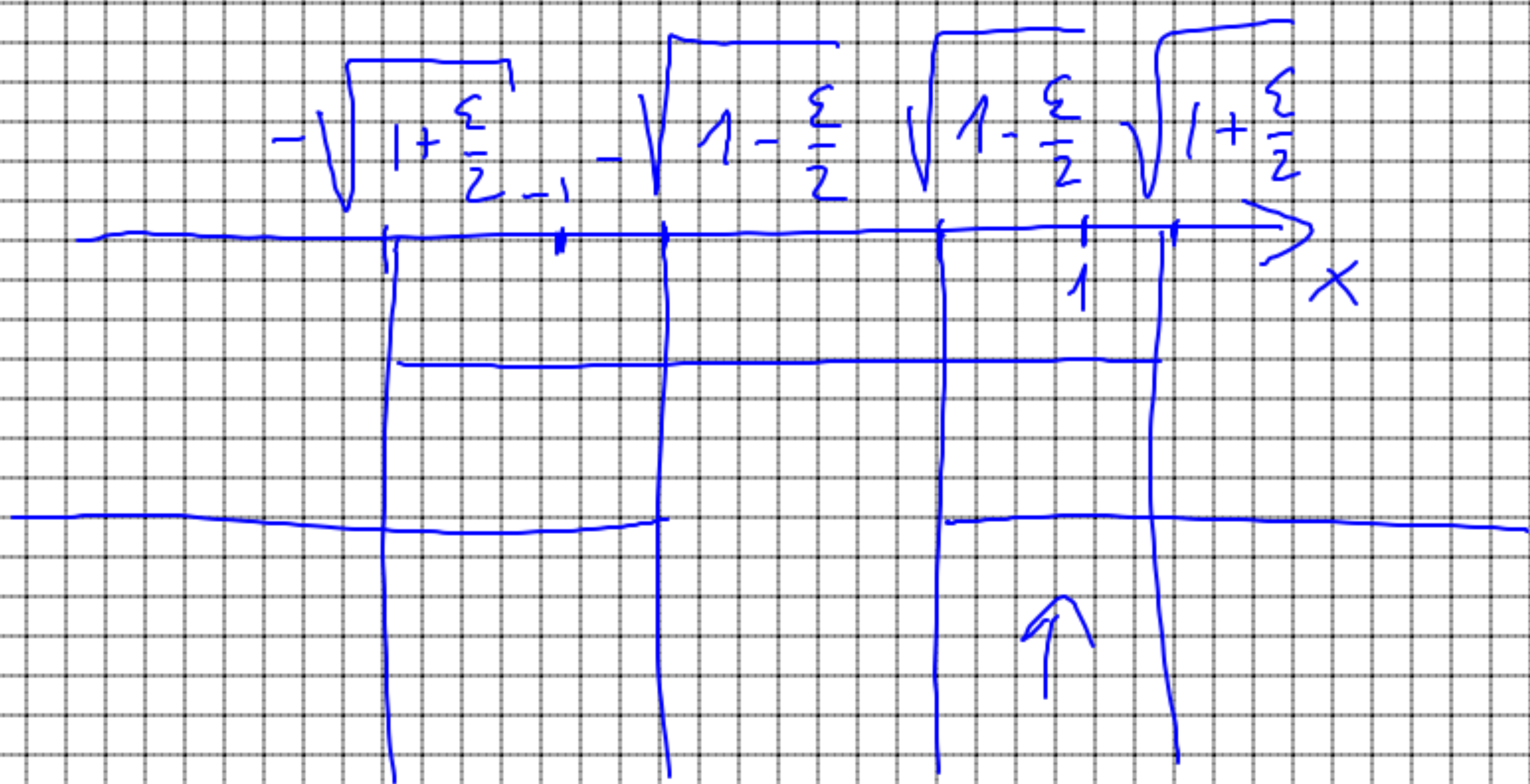
$$\begin{cases} 2x^2 < \varepsilon + 2 \\ 2x^2 > 2 - \varepsilon \end{cases}$$

$2x^2 = \varepsilon + 2 \rightarrow x = \pm\sqrt{\frac{\varepsilon + 2}{2}} = \pm\sqrt{1 + \frac{\varepsilon}{2}}$

$2x^2 = 2 - \varepsilon \rightarrow x = \pm\sqrt{1 - \frac{\varepsilon}{2}}$

$$\begin{cases} -\sqrt{1 + \frac{\varepsilon}{2}} < x < \sqrt{1 + \frac{\varepsilon}{2}} \\ x < -\sqrt{1 - \frac{\varepsilon}{2}} \cup x > \sqrt{1 - \frac{\varepsilon}{2}} \end{cases}$$

$\varepsilon = 0,1$



$$\sqrt{1 - \frac{\varepsilon}{2}} < x < \sqrt{1 + \frac{\varepsilon}{2}}$$

è intorno di 1

N10

$$\lim_{x\to 2} \frac{3}{x+1} = 1$$

$\forall \varepsilon > 0 \ \exists I_\varepsilon(1)$ e corrispondentemente $\exists \delta > 0, I_\delta(2) \mid \forall x \in I_\delta(2)$ si ha

$$\left|\frac{3}{x+1} - 1\right| < \varepsilon$$

$$\left|\frac{3-x-1}{x+1}\right| < \varepsilon \Rightarrow \begin{cases} (1)\ \dfrac{2-x}{x+1} < \varepsilon \\ (2)\ \dfrac{2-x}{x+1} > -\varepsilon \end{cases}$$

(1) $\dfrac{2-x-\varepsilon x-\varepsilon}{x+1} < 0$

$\dfrac{x(-1-\varepsilon)+2-\varepsilon}{x+1} < 0$

N) > 0 $\quad (-1-\varepsilon)x + 2-\varepsilon > 0 \quad (1+\varepsilon)x - 2+\varepsilon < 0$

$\cancel{(1+\varepsilon)}\, x < \dfrac{2-\varepsilon}{1+\varepsilon}$

D) > 0 $\quad x+1>0 \quad x>-1$

		-1		$\frac{2-\varepsilon}{1+\varepsilon}$		x
N	+		+		−	
D	−		+		+	
$\frac{N}{D}$	−		+		−	

(2) $\dfrac{2-x}{x+1} > -\varepsilon \qquad \dfrac{2-x+\varepsilon x+\varepsilon}{x+1} > 0$

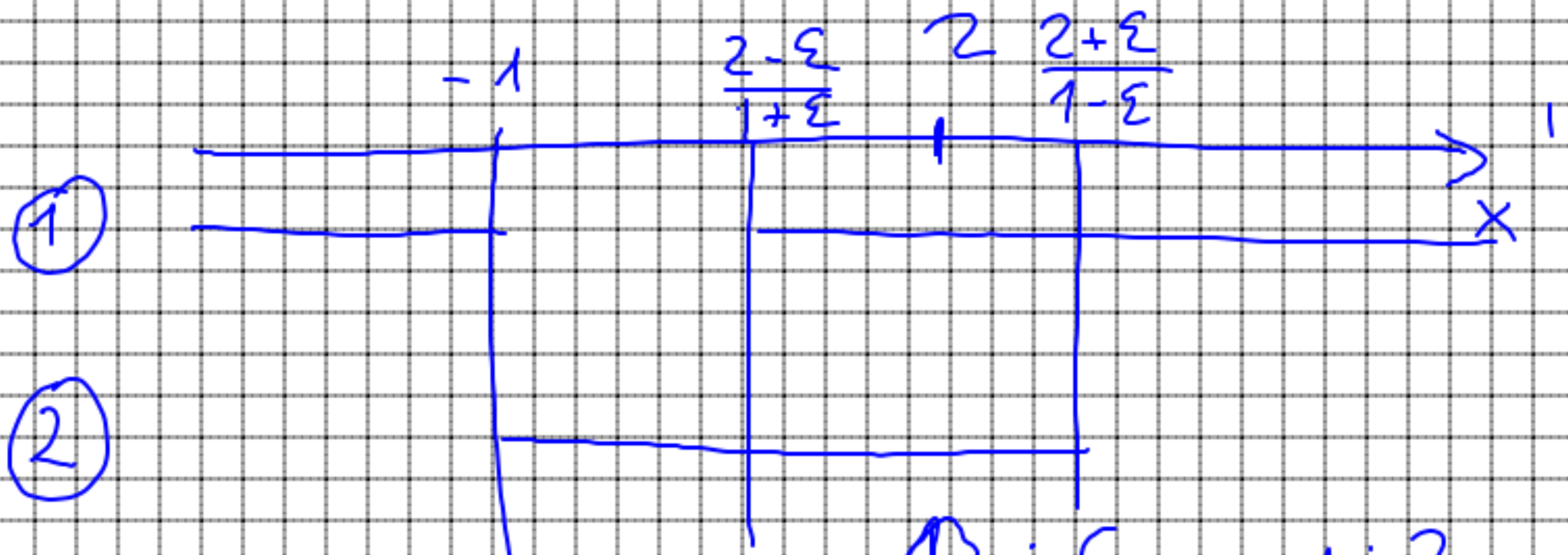
$\dfrac{x(\varepsilon-1)+\varepsilon+2}{x+1} > 0$

N) > 0 $\quad x(\varepsilon-1)+\varepsilon+2>0 \quad (1-\varepsilon)x-\varepsilon-2<0$

$x < \dfrac{\varepsilon+2}{1-\varepsilon}$

D) $\quad x+1>0 \quad x>-1$

		-1		$\frac{\varepsilon+2}{1-\varepsilon}$		x
N	+		+		−	
D	−		+		+	
$\frac{N}{D}$	−		+			



↑ intorno di 2