

Determinare il dominio naturale:

$$44 \quad y = \frac{x}{x^3 - 2x^2 + x}$$

$$[x \neq 0 \wedge x \neq 1]$$

$$x^3 - 2x^2 + x \neq 0$$

$$x(x^2 - 2x + 1) \neq 0 \begin{cases} \nearrow x \neq 0 \\ \searrow x^2 - 2x + 1 \neq 0 \\ \quad (x-1)^2 \neq 0 \Rightarrow x \neq 1 \end{cases}$$

$$x \neq 0 \wedge x \neq 1$$

$$D = (-\infty, 0) \cup (0, 1) \cup (1, +\infty)$$

Determinare il dominio naturale

$$116 \quad y = \frac{\ln|3^x - 9|}{1 - e^{x^2 - 6x}}$$

$$[x \neq 0 \wedge x \neq 2 \wedge x \neq 6]$$

$$\begin{cases} 1 - e^{x^2 - 6x} \neq 0 \\ |3^x - 9| > 0 \end{cases} \begin{cases} e^{x^2 - 6x} \neq 1 \\ 3^x - 9 \neq 0 \end{cases} \begin{cases} x^2 - 6x \neq 0 \\ 3^x \neq 9 \end{cases} \begin{cases} x(x-6) \neq 0 \\ 3^x \neq 3^2 \end{cases}$$

$$\begin{cases} x \neq 0 \wedge x \neq 6 \\ x \neq 2 \end{cases} \Rightarrow x \neq 0 \wedge x \neq 2 \wedge x \neq 6$$

$$D = (-\infty, 0) \cup (0, 2) \cup (2, 6) \cup (6, +\infty)$$

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$$y = \frac{\sqrt{\ln(2x - \sqrt{1-x})}}{\ln(2x+1)}$$

$$\left[ \frac{3}{4} \leq x \leq 1 \right]$$

$$\begin{cases} 2x+1 \neq 1 \\ 2x+1 > 0 \\ 2x - \sqrt{1-x} \geq 1 \end{cases}$$

$$\begin{cases} x \neq 0 \\ x > -\frac{1}{2} \\ \sqrt{1-x} \leq 2x-1 \end{cases}$$

$$\begin{cases} x \neq 0 \\ x > -\frac{1}{2} \\ 2x-1 \geq 0 \\ 1-x \geq 0 \\ 1-x \leq (2x-1)^2 \end{cases}$$

$$\begin{cases} x \neq 0 \\ x > -\frac{1}{2} \\ x \geq \frac{1}{2} \\ x \leq 1 \\ 1-x \leq 4x^2+1-4x \end{cases}$$

SONO "INCLUSI" IN  $x \geq \frac{1}{2}$

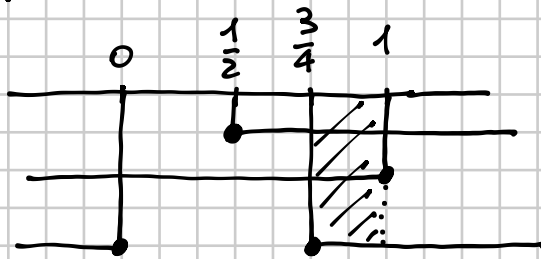
$$4x^2 - 3x \geq 0$$

$$x(4x-3) \geq 0$$

⇓

$$x \leq 0 \vee x \geq \frac{3}{4}$$

$$\begin{cases} x \geq \frac{1}{2} \\ x \leq 1 \\ x \leq 0 \vee x \geq \frac{3}{4} \end{cases}$$



$$\frac{3}{4} \leq x \leq 1$$

$$D = \left[ \frac{3}{4}, 1 \right]$$

INSIEME DOVE  $y \neq 0$

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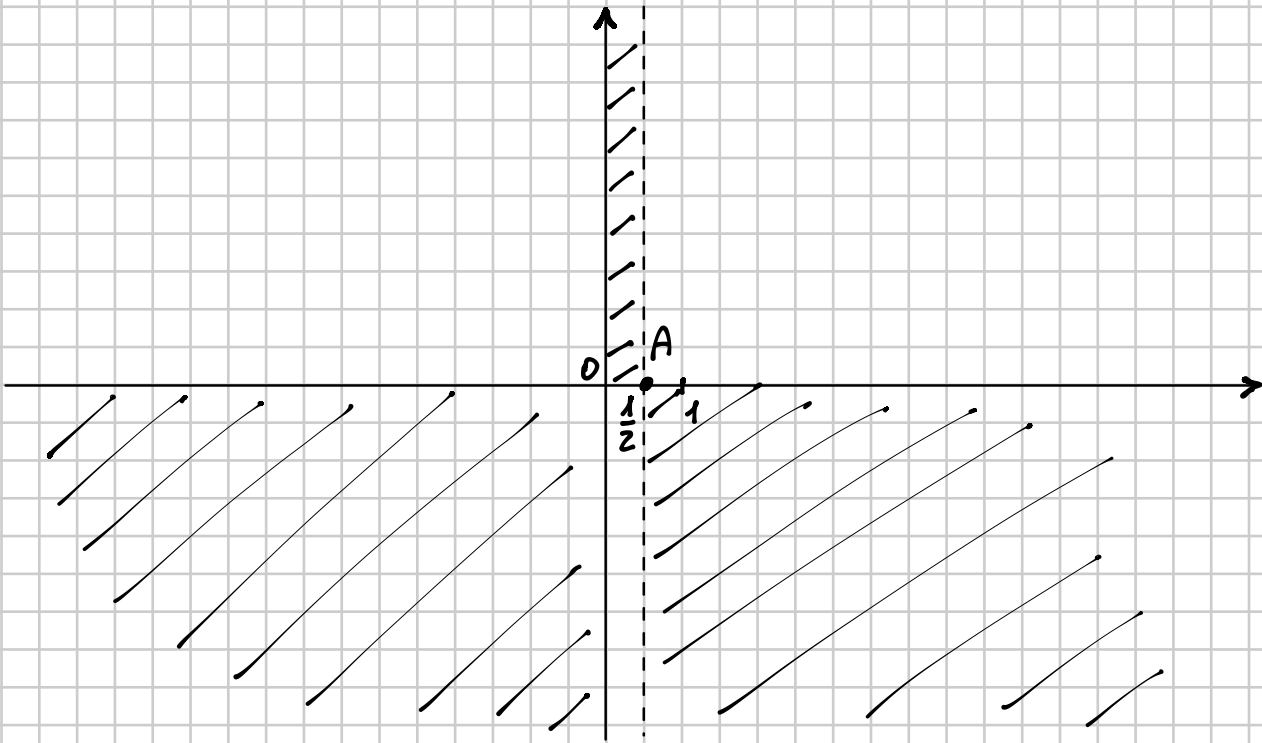
$$y = \frac{e^{2x-1} - 1}{e^x - 1}$$

$$\left[ x < 0 \vee x > \frac{1}{2} \right]$$

1) DOMINIO

$$e^x - 1 \neq 0 \quad x \neq 0$$

$$D = (-\infty, 0) \cup (0, +\infty)$$



2) INTERS. ASSE X (ZERI DELLA FUNZIONE)

$$\begin{cases} y = 0 \\ y = \frac{e^{2x-1} - 1}{e^x - 1} \end{cases}$$

$$\frac{e^{2x-1} - 1}{e^x - 1} = 0$$

$$e^{2x-1} - 1 = 0$$

$$e^{2x-1} = 1 \quad 2x - 1 = 0$$

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

$$A \left( \frac{1}{2}, 0 \right)$$

INTERSEZIONE ASSE Y

$$\begin{cases} x = 0 \leftarrow \text{ma } 0 \text{ non \u00e9 nel dominio, quindi non ci sono intersezioni con l'asse } y \\ y = \frac{e^{2x-1} - 1}{e^x - 1} \end{cases}$$

### 3) SEGNO DELLA FUNZIONE

$$\frac{e^{2x-1} - 1}{e^x - 1} > 0$$

$$N > 0 \quad e^{2x-1} - 1 > 0 \quad e^{2x-1} > 1 \quad 2x - 1 > 0 \quad x > \frac{1}{2}$$

$$D > 0 \quad e^x - 1 > 0 \quad e^x > 1 \quad x > 0 \quad x > 0$$

		0	$\frac{1}{2}$	
N	-	-	0	+
D	-	<del>+</del>	+	+
	+	<del>-</del>	0	+

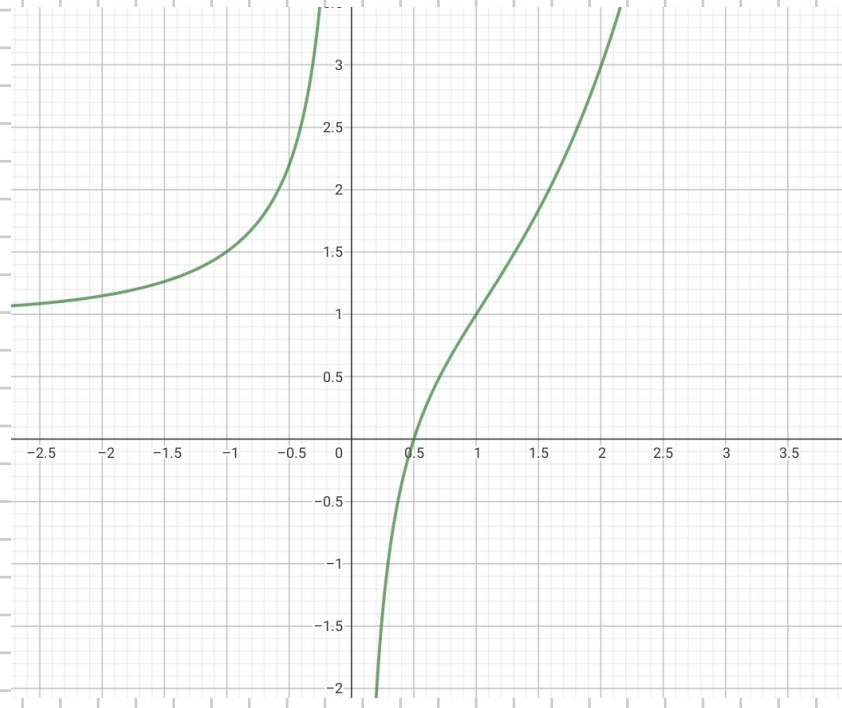


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