

STUDIO DI FUNZIONE COMPLETO

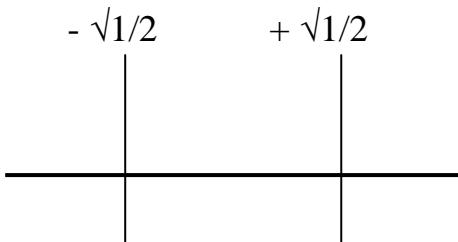
$$y = \frac{6x^2 + 2x + 3}{2(2x^2 + 1)}$$

$$D = \left\{ x \in \mathbb{R} : x \neq \pm \sqrt{1/2} \right\}$$

Dominio:

$$2(2x^2 + 1) \neq 0$$

$$\begin{cases} 2 \neq 0 \\ 2x^2 + 1 \neq 0 \end{cases} \quad \begin{array}{l} \text{mai} \\ \text{sempre} \end{array}$$



Parità:

$$\left. \begin{aligned} f(-x) &= \frac{6x^2 - 2x + 3}{2(2x^2 + 1)} \\ -f(x) &= \frac{6x^2 + 2x + 3}{-2(2x^2 + 1)} \end{aligned} \right\} \quad \begin{array}{l} \text{no parità,} \\ \text{quindi} \\ \text{no simmetrie.} \end{array}$$

Intersezione asse x:

$$y = \frac{6x^2 + 2x + 3}{2(2x^2 + 1)} = 0$$

$$6x^2 + 2x + 3 = 0 \quad \frac{-2 \pm \sqrt{4 - 72}}{12} = \underline{\text{sempre}}$$

no intersezione asse x

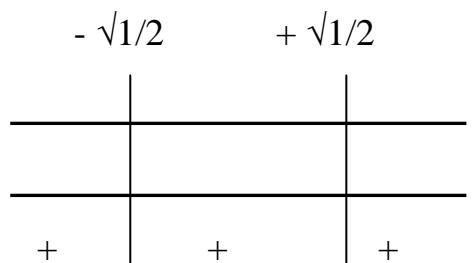
Intersezione asse y:

$$\begin{aligned} x &= 0 \\ Q &= (0 ; 3/2) \end{aligned}$$

Segno:

$$\frac{6x^2 + 2x + 3}{2(2x^2 + 1)} \geq 0$$

$$\begin{cases} 6x^2 + 2x + 3 \geq 0 \\ 2(2x^2 + 1) \geq 0 \end{cases} \quad \begin{array}{l} \text{sempre} \\ \text{sempre} \end{array}$$



Limiti:

$$\lim_{x \rightarrow +\infty} \left(\frac{\infty}{\infty} \right) \frac{6x^2 + 2x + 3}{2(2x^2 + 1)} = \frac{\cancel{x^2}(6 + 2/x + 3/x^2)}{\cancel{x^2}(4 + 2/x^2)} = \frac{6}{4} = \frac{3}{2}$$

$$\lim_{x \rightarrow -\infty} \left(\frac{\infty}{\infty} \right) \frac{6x^2 + 2x + 3}{2(2x^2 + 1)} = \frac{\cancel{x^2}(6 + 2/x + 3/x^2)}{\cancel{x^2}(4 + 2/x^2)} = \frac{6}{4} = \frac{3}{2}$$

A.Or
 $y = 3/2$

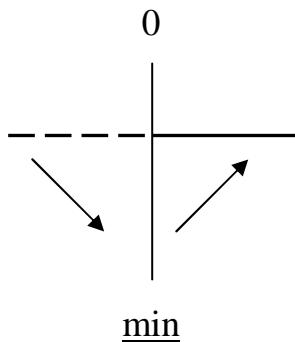
Abbiamo l'Asintoto Orizzontale nel punto $y = 3/2$.

Derivata 1[^]:

$$y = \frac{6x^2 + 2x + 3}{2(2x^2 + 1)} \geq 0$$

$$y' = \frac{(12x + 2) \cdot (4x^2 + 2) - 8x \cdot (6x^2 + 2x + 3)}{[2(2x^2 + 1)]^2} =$$

$$= \frac{48x^3 + 24x + 8x^2 + 4 - 48x^3 - 16x^2 - 24x}{(4x^2 + 2)^2} = \frac{-8x^2 + 4}{(4x^2 + 2)^2} \geq 0$$



Abbiamo un minimo nel punto 0.

Derivata 2^:

$$y' = \frac{-8x^2 + 4}{(4x^2 + 2)^4} =$$

$$y'' = \frac{-16x(4x^2 + 2)^2 - 2(4x^2 + 2)8x - (8x^2 + 4)}{(4x^2 + 2)^4} =$$

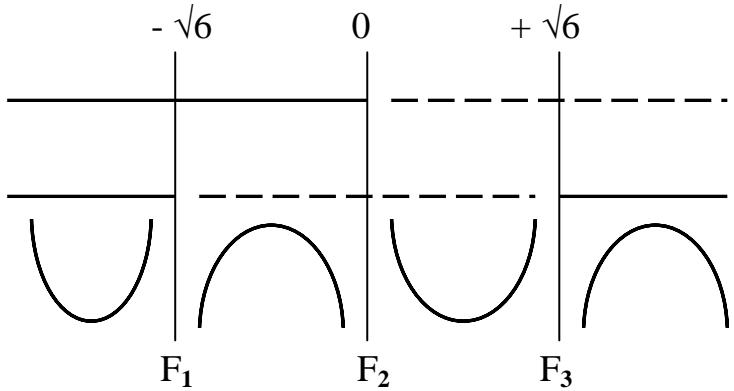
sempre \leftarrow

$$= \frac{-16x \boxed{(4x^2 + 2)} (12x^2 - 2)}{\boxed{(4x^2 + 2)^4}} \geq 0$$

\downarrow

sempre

$$\begin{cases} x \leq 0 \\ x \leq -\frac{\sqrt{6}}{6}; x \geq \frac{\sqrt{6}}{6} \end{cases}$$



Abbiamo dei punti di Flesso in $-\sqrt{6}; 0; +\sqrt{6}$.

Grafico:

