

GLI ASINTOTI

M5015



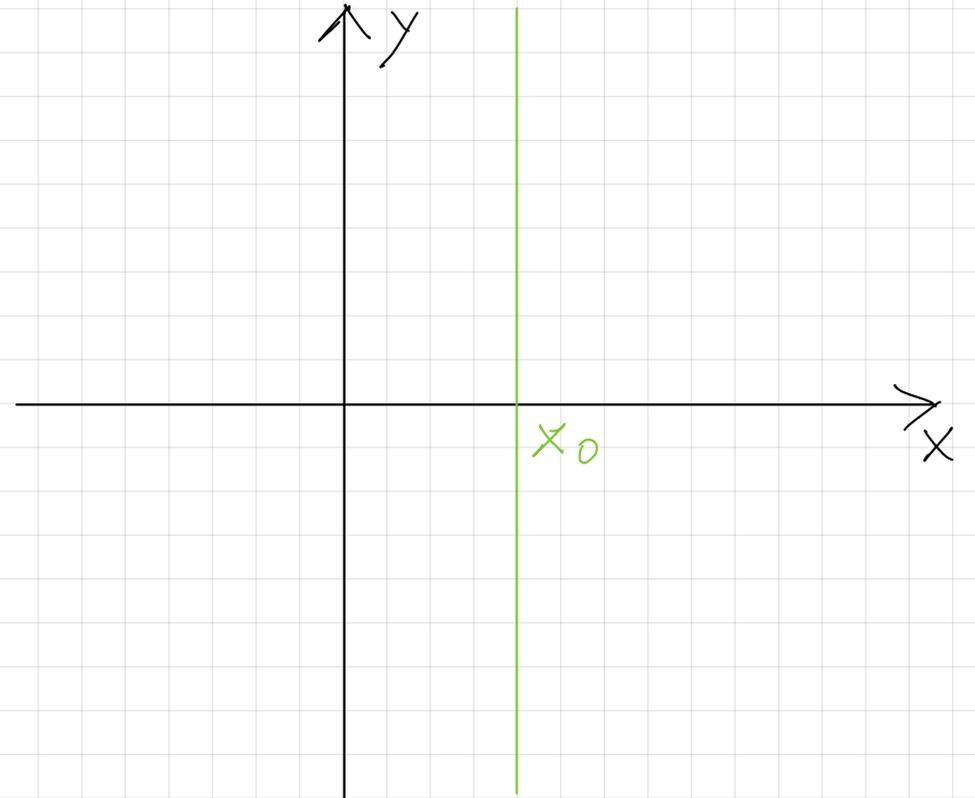
GLI ASINTOTI SONO DELLE RETTE CHE CI GUIDANO NEL DISEGNO DEL GRAFICO.

UN ASINTOTO NON TOCCA IL GRAFICO DELLA FUNZIONE

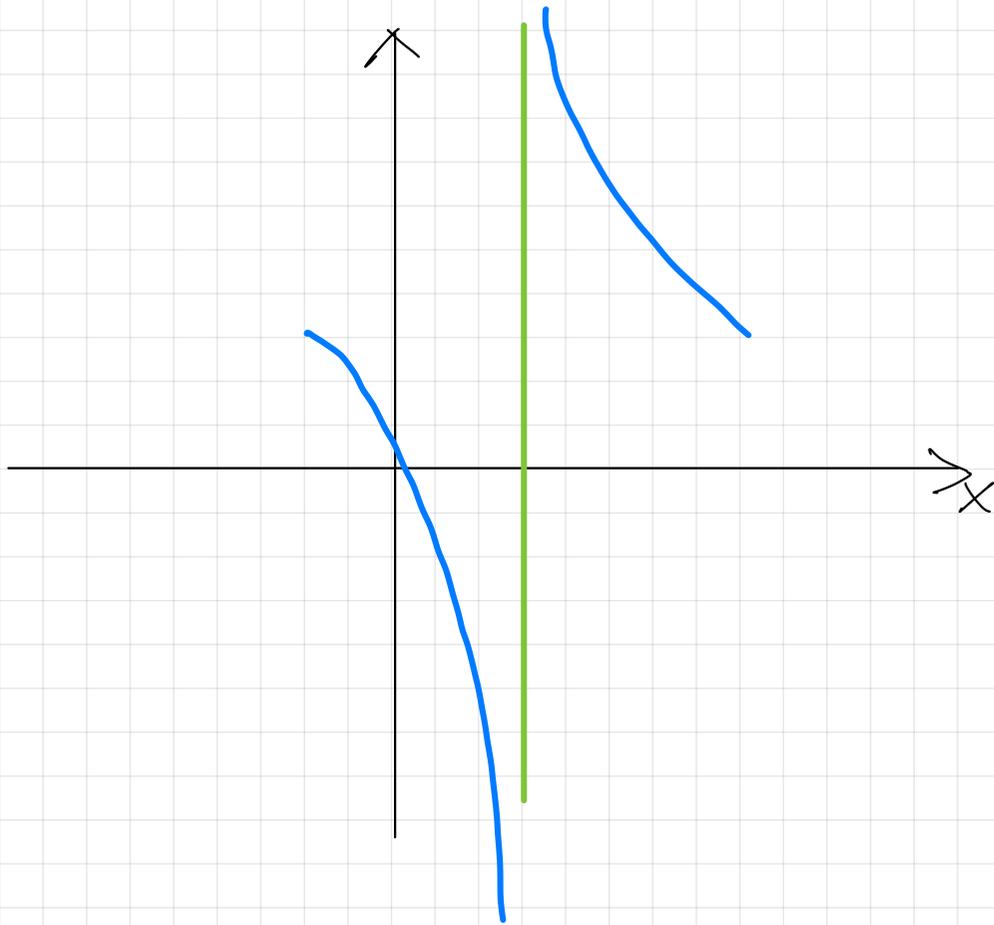
1) ASINTOTI VERTICALI

$$\lim_{x \rightarrow x_0} f(x) = \infty$$

$$x = x_0$$



FS: $f(x) = \frac{2+x}{x-3}$



$$\lim_{x \rightarrow 3^+} \frac{2+x}{x-3} = +\infty$$

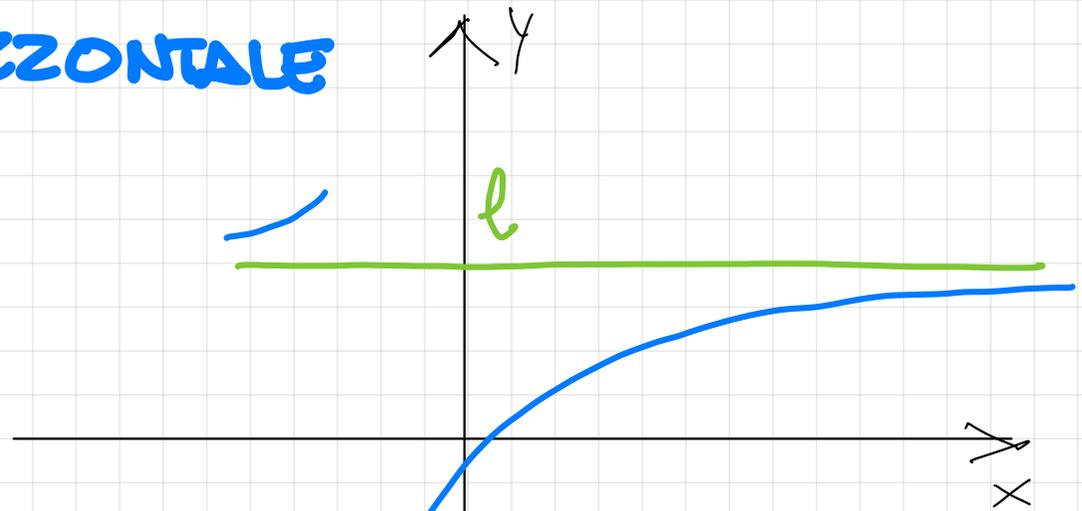
$$\lim_{x \rightarrow 3^-} \frac{2+x}{x-3} = -\infty$$

$$x = 3$$

2) ASINTOTO ORIZZONTALE

$$\lim_{x \rightarrow \infty} f(x) = l$$

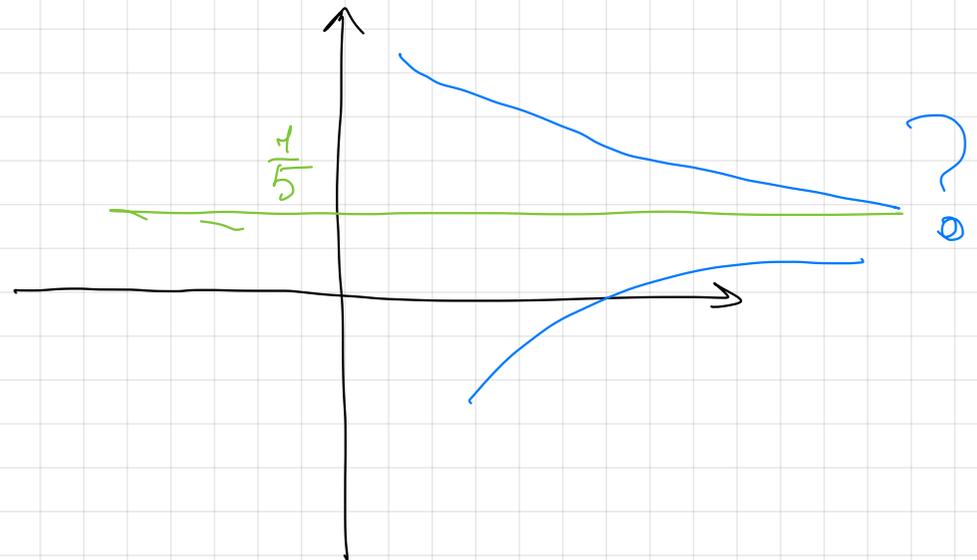
$$y = l$$



ES: $f(x) = \frac{x^3 + 8x^2 - 6}{5x^3 + 3}$

$$\lim_{x \rightarrow +\infty} \frac{x^3 + 8x - 6}{5x^3 + 3} = \frac{1}{5}$$

$$y = \frac{1}{5}$$



3) ASINTOTO OBLIQUO

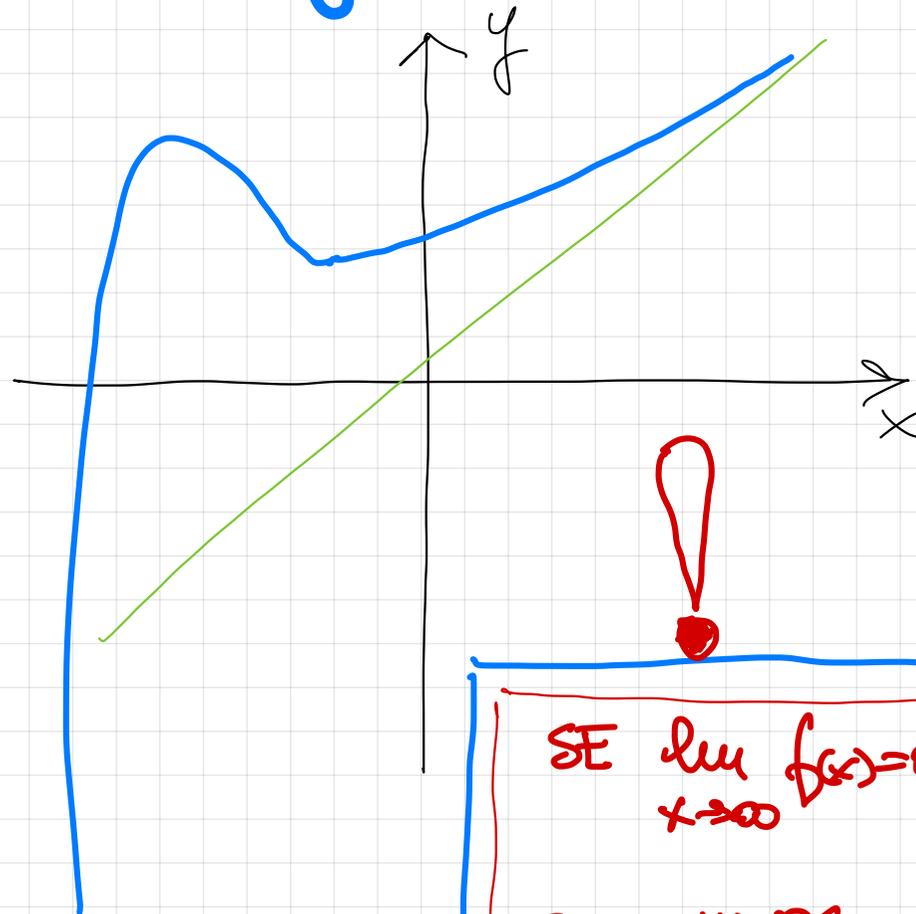
$$y = mx + q$$

$$m = \lim_{x \rightarrow \infty} \frac{f(x)}{x}$$

$$q = \lim_{x \rightarrow \infty} [f(x) - mx]$$

∃ FINITI con $m \neq 0$

Ex : $f(x) = y = \frac{3x^2 - 2x + 1}{x - 1}$



SE $\lim_{x \rightarrow \infty} f(x) = \infty$

SOLO IN QS
CASO CERCO
ASINTOTI
OBLIQUI

$$\lim_{x \rightarrow +\infty} \frac{3x^2 - 2x + 1}{x - 1} = +\infty$$

ESISTONO LE CONDIZIONI PER
L'ESISTENZA DI UN ASINTO OBLIQUO

$$m = \lim_{x \rightarrow +\infty} \frac{3x^2 - 2x + 1}{x(x-1)} = \lim_{x \rightarrow +\infty} \frac{3x^2 - 2x + 1}{x^2 - x} = 3$$

$$q = \lim_{x \rightarrow +\infty} \frac{3x^2 - 2x + 1}{x - 1} - 3x = \lim_{x \rightarrow +\infty} \frac{3x^2 - 2x + 1}{x - 1} - \frac{3x(x-1)}{x-1}$$

M.C.M.

$$= \lim_{x \rightarrow +\infty} \frac{\cancel{3x^2} - 2x + 1 - \cancel{3x^2} + 3x}{x - 1} = \lim_{x \rightarrow +\infty} \frac{x + 1}{x - 1} = 1 \quad q = 1$$

$$y = 3x + 1$$

