

ASINTOTI

DETERMINA LE EQUAZIONI DEGLI EVENTUALI ASINTOTI DELLE FUNZIONI:

(1)

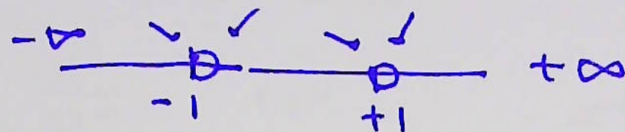
A) $y = \frac{4x^2 - x + 1}{x^2 - 1}$

B) $y = \frac{x^4}{1 - x^3}$

C) $y = e^{\frac{x^2 + 1}{x^2 - 3x}}$

A) Determiniamo DOMINIO $x^2 - 1 \neq 0 \quad x \neq \pm 1$

D: $\mathbb{R} - \{\pm 1\}$

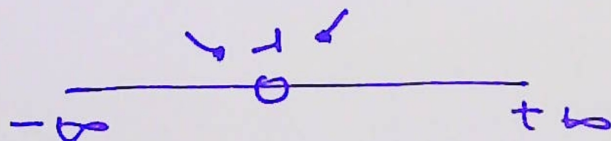


$\lim_{x \rightarrow \pm\infty} \frac{4x^2 - x + 1}{x^2 - 1} = 4 \quad y = 4 \text{ ASINTOTO ORIZZONTALE}$

$\lim_{x \rightarrow 1^+} \frac{4x^2 - x + 1}{x^2 - 1} = \frac{4}{0^+} = +\infty$
 $\lim_{x \rightarrow 1^-} f(x) = \frac{4}{0^-} = -\infty$ } $x = 1 \text{ ASINTOTO VERTICALE}$

$\lim_{x \rightarrow -1^{\pm}} \frac{4x^2 - x + 1}{x^2 - 1} = \pm\infty$ } $x = -1 \text{ ASINTOTO VERTICALE}$

B) DOMINIO $x \neq 1$



$\lim_{x \rightarrow -\infty} \frac{x^4}{1 - x^3} = +\infty$

~~ASINTOTO ORIZZONTALE~~

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

$\lim_{x \rightarrow 1} \frac{x^4}{1 - x^3} = \frac{1}{0} = \infty$ $x = 1$ ASINTOTO VERTICALE

$y = mx + q$

$m = \lim_{x \rightarrow \infty} \frac{x^4}{1 - x^3} \cdot \frac{1}{x} = \frac{x^4}{x - x^4} = -1 \quad m = -1$

$q = \lim_{x \rightarrow \infty} \frac{x^4}{1 - x^3} + x = \frac{x^4 + x - x^4}{1 - x^3} = 0$

$y = -x$ ASINTOTO OBLIQUO