

LIMITES LATERAIS e INFINITOS



$$k) \lim_{x \rightarrow +\infty} \frac{\underbrace{3x^7}_{(+\infty)} - \underbrace{x^{10}}_{(+\infty)}}{\underbrace{5x^{15}}_{(+\infty)} - \underbrace{x^{10}}_{(+\infty)}}$$

$+\infty - \infty \rightarrow ?$

$\frac{\infty}{\infty} \rightarrow 0$

$$= \lim_{x \rightarrow +\infty} \frac{x^{10} \left(\frac{3}{x^3} - 1 \right)}{x^{15} \left(5 - \frac{1}{x^5} \right)}$$

$$= \lim_{x \rightarrow +\infty} \frac{\frac{3}{x^3} - 1}{x^5 \cdot \left(5 - \frac{1}{x^5} \right)}$$

The diagram shows the evaluation of the limit. The numerator $\frac{3}{x^3} - 1$ is evaluated as $0 - 1 = -1$. The denominator $x^5 \cdot \left(5 - \frac{1}{x^5} \right)$ is evaluated as $+\infty \cdot (5 - 0) = +\infty$. The final result is 0 .