

EJERCICIO MIBE2493:

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

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

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

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

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

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

$$= e^{\lim_{x \rightarrow \infty} \frac{-4x + 1}{\sqrt{x^2 - 1}} \cdot \frac{x}{3}} = e^{\lim_{x \rightarrow \infty} \frac{-4x^2 + x}{15x^2 - 1}} =$$

$$= e^{-\frac{4}{15}} = \frac{1}{e^{\frac{4}{15}}} = \frac{1}{\sqrt[15]{e^4}} \frac{\sqrt[15]{e''}}{\sqrt[15]{e''}} = \frac{\sqrt[15]{e''}}{\sqrt[15]{e^{15}}}$$

$$= \frac{\sqrt[15]{e''}}{e}$$