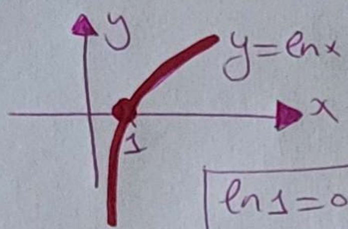
EBAU — ANDALUCÍA

$$\lim_{x \to 1} \left(\frac{1}{\ln x} - \frac{2}{x^2-1} \right) = \frac{1}{\ln 1} - \frac{2}{1-1} =$$

$$= \frac{1}{0} - \frac{2}{0} = \boxed{\infty - \infty}$$

Ind

Operamos (común denominador)



$\boxed{\ln 1 = 0}$

$$\lim_{x \to 1} \frac{x^2 - 1 - 2 \cdot \ln x}{\ln x \cdot (x^2-1)} = \frac{1 - 1 - 2 \cdot \overset{0}{\ln 1}}{\underset{0}{\ln 1} \; \underset{0}{(1-1)}} = \boxed{\frac{0}{0}}$$

Ind

← Regla de L'HÔPITAL

derivada de un producto $(f \cdot g)' = f' \cdot g + f \cdot g'$

$$\lim_{x \to 1} \frac{2x - 2 \frac{1}{x}}{\frac{1}{x} \cdot (x^2-1) + \ln x \cdot 2x} = \boxed{\frac{0}{0}}$$

Ind

← R. L'HÔPITAL

$$\lim_{x \to 1} \frac{2 + 2 \cdot \frac{1}{x^2}}{\frac{x^2+1}{x^2} + 2(1 + \ln x)} = (*)$$

$(*)$ $\left(\frac{1}{x}\right)' = \frac{0 \cdot x - 1 \cdot 1}{x^2} = \frac{-1}{x^2}$

$\left(\frac{x^2-1}{x}\right)' = \frac{2x \cdot x - (x^2-1) \cdot 1}{x^2}$

$= \frac{2x^2 - x^2 + 1}{x^2}$

$= \frac{x^2+1}{x^2}$

$(2 \ln x \cdot x)' = 2\left(\frac{1}{x} \cdot x + \ln x \cdot 1\right)$

$= 2(1 + \ln x)$

$$(*) = \frac{2+2}{2+2(1+0)} = \frac{4}{4} = 1$$