Integral - Impropia

Byte Planet

$$\int_0^1 \frac{1}{x^2}\,dx$$

* $x = 0$ discontinua

$$= \lim_{\varepsilon \to 0} \int_{0+\varepsilon}^{1} \frac{1}{x^2}\,dx = \lim_{\varepsilon \to 0} \int_{\varepsilon}^{1} x^{-2}\,dx$$

* $\int u^n\,du = \frac{u^{n+1}}{n+1} + c$

$$= \lim_{\varepsilon \to 0} \frac{x^{-1}}{-1}\Big|_{\varepsilon}^{1} = \lim_{\varepsilon \to 0} \left[-x^{-1}\right]\Big|_{\varepsilon}^{1}$$

$$= \lim_{\varepsilon \to 0} \left[-1^{-1} - -\varepsilon^{-1}\right]$$

$$= \left[\frac{-1}{1} - \frac{-1}{0^+}\right] = -1 - \infty = -\infty$$

∴ Es divergente en ∞