

Cálculo II

Integrais Impróprias

$$a - \int_3^{\infty} \frac{1}{(x-2)^{\frac{3}{2}}} dx$$

$$\lim_{b \rightarrow \infty} \int_3^b \frac{1}{(x-2)^{\frac{3}{2}}} dx$$

$$\int_3^b \frac{1}{(x-2)^{\frac{3}{2}}} dx = -\frac{2}{(x-2)^{\frac{1}{2}}} + C$$

$$\lim_{b \rightarrow \infty} \int_3^b \frac{1}{(x-2)^{\frac{3}{2}}} dx = 0 - (-2)$$

$$\lim_{b \rightarrow \infty} 0 + 2 = 2 \quad \text{Convergente}$$

$$b - \int_0^{\infty} \frac{1}{4\sqrt[4]{1+x}} dx$$

$$\lim_{c \rightarrow \infty} \int_0^c \frac{1}{4\sqrt[4]{1+x}} dx$$

$$\lim_{c \rightarrow \infty} \int_0^c \frac{1}{4\sqrt[4]{1+x}} dx = \frac{4}{3} (1+x)^{3/4} + C$$

$$\lim_{c \rightarrow \infty} \int_0^c \frac{1}{4\sqrt[4]{1+x}} dx = \text{Divergente} \quad] \rightarrow \infty$$

Coca-Cola

$$c - \int_{-\infty}^3 \frac{1}{3-4x} dx$$

$$\lim_{d \rightarrow -\infty} \int_d^3 \frac{1}{3-4x} dx$$

$$\lim_{d \rightarrow -\infty} \int_d^{3/4} \frac{1}{3-4x} dx + \int_{3/4}^3 \frac{1}{3-4x} dx$$

$$\lim_{d \rightarrow -\infty} \frac{1}{3-4x} \rightarrow \infty] \text{ Divergente} =$$

$$d - \int_{-\infty}^{\infty} x^3 e^{-4} dx$$

$$\lim_{\substack{c \rightarrow \infty \\ d \rightarrow -\infty}} \int_d^c x^3 e^{-4} dx$$

$$\lim_{\substack{c \rightarrow \infty \\ d \rightarrow -\infty}} \int_d^c x^3 e^{-4} dx = \frac{x^4}{4e^4} + C$$

$$\lim_{\substack{c \rightarrow \infty \\ d \rightarrow -\infty}} \int_d^e x^3 e^{-4} dx \rightarrow \infty] \text{ Divergente,}$$