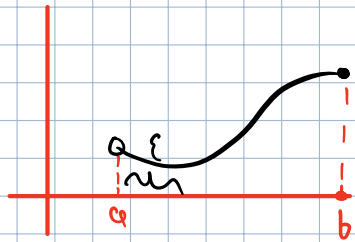


Integral - Impropias

Byte Planet

$$\int_0^1 \frac{e^{x^{\frac{1}{2}}}}{\sqrt{x}} dx \quad \text{discontinua en } x=0$$

1) Cuando f no es continua en el extremo inferior



$$\rightarrow \int_a^b f(x) dx = \lim_{\epsilon \rightarrow 0} \int_{a+\epsilon}^b f(x) dx$$

$$= \lim_{\epsilon \rightarrow 0} \int_{0+\epsilon}^1 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$$

Cambio de Variable

$$u = \sqrt{x}$$

$$du = \frac{1}{2\sqrt{x}} dx$$

$$= \lim_{\epsilon \rightarrow 0} \int_{\epsilon}^1 \frac{e^u}{\cancel{\sqrt{x}}} 2\cancel{\sqrt{x}} du$$

$$dx = 2\sqrt{x} du$$

$$= 2 \lim_{\epsilon \rightarrow 0} \int e^u du = 2 \lim_{\epsilon \rightarrow 0} e^u \Big|_{\epsilon}^1 = 2 \lim_{\epsilon \rightarrow 0} e^{\sqrt{x}} \Big|_{\epsilon}^1$$

$$= 2 \lim_{\epsilon \rightarrow 0} [e^1 - e^{\sqrt{\epsilon}}] = 2 [e^1 - e^{\sqrt{0}}]$$

$$= 2[e - 1] = \underline{2e - 2} \quad \therefore \text{Converge a } 2e - 2$$