

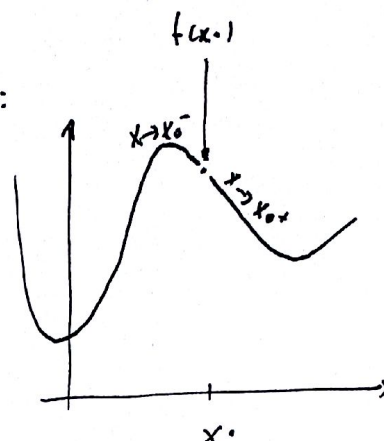
Estudia la continuidad de estas funciones:

$$f(x) = \begin{cases} e^x & \text{si } x < 1 \\ \ln x & \text{si } x \geq 1 \end{cases}$$

$$g(x) = \begin{cases} \frac{1}{x} & \text{si } x < 1 \\ 2x-1 & \text{si } x \geq 1 \end{cases}$$

Para que $f(x)$ sea continua en $x=x_0$:

- $f(x_0)$ existe
- límites laterales coinciden
- $f(x_0)$ sea igual que los límites laterales

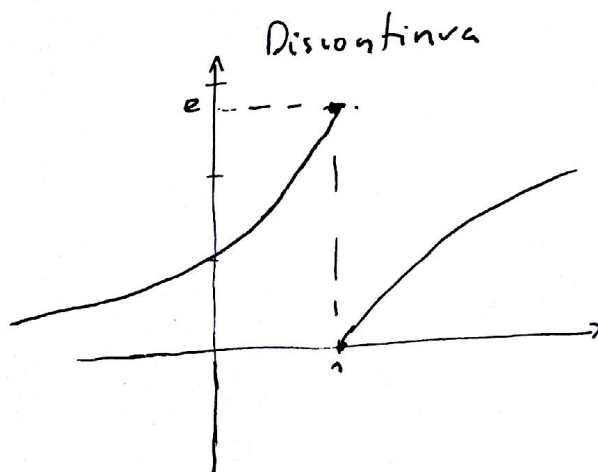


a) $f(x) = \begin{cases} e^x & x < 1 \\ \ln x & x \geq 1 \end{cases}$ puntos de estudio: $x=1$

$$f(1) = \ln 1 = 0$$

$$\lim_{x \rightarrow 1^-} f(x) = \lim_{x \rightarrow 1^-} e^x = e^1 = e$$

$$\lim_{x \rightarrow 1^+} f(x) = \lim_{x \rightarrow 1^+} \ln x = \ln 1 = 0$$



b) $f(x) = \begin{cases} \frac{1}{x} & x < 1 \\ 2x-1 & x \geq 1 \end{cases}$ puntos de estudio: $x=1, x=0$

$$x=1 \left\{ \begin{array}{l} f(1) = 2 \cdot 1 - 1 = 1 \\ \lim_{x \rightarrow 1^-} \frac{1}{x} = \frac{1}{1} = 1 \\ \lim_{x \rightarrow 1^+} 2x-1 = 2 \cdot 1 - 1 = 1 \end{array} \right. \text{continua}$$

$$x=0 \left\{ \begin{array}{l} f(0) = \frac{1}{0} = \infty \\ \lim_{x \rightarrow 0^-} \frac{1}{x} = -\infty \\ \lim_{x \rightarrow 0^+} \frac{1}{x} = +\infty \end{array} \right. \text{discontinua}$$

