EJERCICIO M2BE3330:

$$\lim_{x\to 1}\left(\frac{x+1}{2x}\right)^{\frac{1}{x-1}} = \left(\frac{2}{2}\right)^{\frac{1}{0}} = \left(1^{\infty}\right) \text{ (INDET.)}$$

Usaremos la definición del número "e":

$$\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^{x} = e$$

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

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

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

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

e

$$= e^{\lim_{x\to 1}\left(\frac{-x+1}{2x}\cdot\frac{1}{x-1}\right)} = e^{\lim_{x\to 1}\left(\frac{-\cancel{(x-1)}}{2x}\cdot\frac{1}{\cancel{x-1}}\right)} =$$

$$= e^{\lim_{x\to 1}\frac{-1}{2x}} = e^{-1/2} = \frac{1}{e^{1/2}} =$$

$$= \frac{1}{\sqrt{e}}\cdot\frac{\sqrt{e}}{\sqrt{e}} = \boxed{\frac{\sqrt{e}}{e}}$$