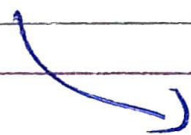


$$\lim_{x \rightarrow y} \frac{x^y - y^x}{x^x - y^y} = \left(\frac{0}{0}\right) \text{ form}$$

apply L'Hospital rule.

$$\lim_{x \rightarrow y} \frac{y \cdot x^{y-1} - y^x \log y}{x^x (1 + \log x) - 0}$$



$$\left[\begin{array}{l} \text{let } t = x^x \\ \log t = x \log x \\ \frac{1}{t} \frac{dt}{dx} = \log x + 1 \\ \frac{dt}{dx} = (\log x + 1) x^x \end{array} \right]$$

$$\Rightarrow \frac{y^y - y^y \log y}{y^y (1 + \log y)}$$

$\Rightarrow$

$$\boxed{\frac{1 - \log y}{1 + \log y}}$$

option (b)