a) $\lim\limits_{x \to 0} \dfrac{e^{x\ln 8} - e^{x\ln 2}}{4x} = \left\langle\!\left\langle \dfrac{e^0 - e^0}{0} \right\rangle\!\right\rangle = \left\langle\!\left\langle \dfrac{0}{0} \right\rangle\!\right\rangle$

IND.

$\lim\limits_{x \to 0} \dfrac{e^{x\ln 8} \cdot \ln 8 - e^{x\ln 2} \cdot \ln 2}{4} = \dfrac{\ln 8 - \ln 2}{4}$

$= \dfrac{\ln 2^3 - \ln 2}{4} = \dfrac{3\ln 2 - \ln 2}{4} = \dfrac{2\ln 2}{4}$

$= \dfrac{\ln 2}{2}$

B.-H.

$\Longrightarrow \lim\limits_{x \to 0} \dfrac{8^x - 2^x}{4} = \ln 2 \cdot \dfrac{1}{2}$

b) $$\lim_{x \to -1} \frac{\ln(x+2)}{\ln(5)} \cdot \frac{1}{x+1} = \ll \frac{0}{0} \gg$$

INDÉTERMINÉ

$$\lim_{x \to -1} \frac{\left(\ln(x+2)\right)'}{\left(\ln(5) \cdot (x+1)\right)'} = \lim_{x \to -1} \frac{\frac{(x+2)'}{x+2}}{\ln(5) \cdot 1}$$

$$= \lim_{x \to -1} \frac{1}{x+2} \cdot \frac{1}{\ln(5)} = \frac{1}{-1+2} \cdot \frac{1}{\ln(5)}$$

$$= \frac{1}{1} \cdot \frac{1}{\ln(5)} = \frac{1}{\ln(5)}$$

B.-H.

$$\Longrightarrow \lim_{x \to -1} \frac{\log_5(x+2)}{x+1} = \frac{1}{\ln(5)}$$