1/ Calculer, en justifiant : a) $\displaystyle \lim_{x \to +\infty} \frac{e^x}{1+e^x}$ **b)** $\displaystyle \lim_{x \to -\infty} \frac{e^x}{1+e^x}$ **.**

a) Si $x \to +\infty$, $e^x \to +\infty$ et $\dfrac{1}{e^x} \to 0$: $\dfrac{e^x}{1+e^x} = \dfrac{e^x}{e^x(\frac{1}{e^x}+1)} = \dfrac{1}{\frac{1}{e^x}+1}$, d'où $\displaystyle \lim_{x \to +\infty} \frac{e^x}{1+e^x}$.

b) Si $x \to -\infty$, $e^x \to 0$: $\displaystyle \lim_{x \to -\infty} \frac{e^x}{1+e^x} = \frac{0}{1+0} = 0$.

2/ Calculer, en justifiant : a) $\displaystyle \lim_{x \to +\infty} \frac{1}{xe^x+1}$ **b)** $\displaystyle \lim_{x \to -\infty} \frac{1}{xe^x+1}$ **.**

a) Si $x \to +\infty$, $e^x \to +\infty$ et $xe^x \to +\infty$, donc $xe^x + 1 \to +\infty$: $\displaystyle \lim_{x \to +\infty} \frac{1}{xe^x+1} = \frac{1}{\infty} = 0$.

b) Si $x \to -\infty$, $e^x \to 0$ et $xe^x \to 0$, donc $xe^x + 1 \to 1$: $\displaystyle \lim_{x \to -\infty} \frac{1}{xe^x+1} = \frac{1}{0+1} = 1$.