

a)  $\lim_{x \rightarrow +\infty} \frac{e^x}{x}$

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$$\lim_{x \rightarrow +\infty} e^x = \infty, \quad \lim_{x \rightarrow +\infty} x = \infty$$

$$\text{and } \lim_{x \rightarrow \infty} \frac{f'(x)}{g'(x)} = \frac{e^x}{1} \text{ exists.}$$

$$\therefore \lim_{x \rightarrow +\infty} \frac{e^x}{x} = \lim_{x \rightarrow +\infty} \frac{e^x}{1} = \infty$$

b)  $\lim_{x \rightarrow +\infty} \frac{x}{e^x}$

Similar to a),

$$\therefore \lim_{x \rightarrow +\infty} \frac{x}{e^x} = \lim_{x \rightarrow +\infty} \frac{1}{e^x} = 0$$