

L'HOPITAL

$$\textcircled{1} \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

$$\textcircled{2} \lim_{x \rightarrow \infty} \frac{2x^3}{x - \sin x} = 12$$

$$\textcircled{3} \lim_{x \rightarrow 1} \frac{e^x - e}{x^2 - 1} = \frac{e}{2}$$

$$\textcircled{4} \lim_{x \rightarrow \infty} \frac{2x^2 - 1}{e^{2x}} = 0$$

$$\textcircled{5} \lim_{x \rightarrow \infty} \frac{\log x}{\cotag x} = 0$$

$$\textcircled{6} \lim_{x \rightarrow \infty} \cotag x \cdot \arcsin x = 1$$

$$\textcircled{7} \lim_{x \rightarrow 1} \left(\frac{1}{x-1} - \frac{e}{e^x - e} \right) = \frac{1}{2}$$

$$\textcircled{8} \lim_{x \rightarrow 1} \left(\frac{1}{\ln x} - \frac{1}{x-1} \right) = \frac{1}{2}$$

$$\textcircled{9} \lim_{x \rightarrow 1} x^{\frac{1}{1-x}} = \frac{1}{e}$$

$$\textcircled{10} \lim_{x \rightarrow \infty} \left[\cos\left(\frac{1}{x}\right) \right]^x = 1$$

$$\textcircled{11} \lim_{x \rightarrow \frac{\pi}{2}} (\tan x)^{\cos x} = 1$$

$$\textcircled{12} \lim_{x \rightarrow \infty} (2^x - 1)^{\frac{2}{x+1}} = 4$$

$$\textcircled{13} \lim_{x \rightarrow \infty} (\sin x)^{\frac{x}{\ln(2-e^x)}} = 1$$

$$\textcircled{14} \lim_{x \rightarrow \infty} x^{\frac{1}{\tan \frac{x}{2}}} = 1$$

$$\textcircled{15} \lim_{x \rightarrow \frac{\pi}{2}} (1 - \cos 2x)^{\frac{1}{\tan \frac{x}{2}}} = 1$$