

AP Calculus - L'Hôpital's Rule Practice

Evaluate each limit. Use L'Hôpital's Rule if it can be applied. If it cannot be applied, evaluate using another method and write a * next to your answer.

$$1) \lim_{x \rightarrow 1} \frac{5 \ln x}{x - 1}$$

$$2) \lim_{x \rightarrow \infty} \frac{\ln(x + 1)^3}{\ln x^3}$$

$$3) \lim_{x \rightarrow \infty} \frac{2x^2}{e^x}$$

$$4) \lim_{x \rightarrow 0} \frac{4(e^x - 1 - x)}{x^2}$$

$$5) \lim_{x \rightarrow \infty} \frac{\ln x}{2x}$$

$$6) \lim_{x \rightarrow \infty} \frac{\ln x^3}{\ln(x + 2)^2}$$

$$7) \lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x^3}$$

$$8) \lim_{x \rightarrow 0} \frac{2(e^x - 1 - x)}{1 - \cos x}$$

$$9) \lim_{x \rightarrow 0} \frac{3x^2}{e^x - 1 - x}$$

$$10) \lim_{x \rightarrow 2} \frac{\sqrt{x - 1} - 1}{x - 2}$$

$$11) \lim_{x \rightarrow 1} \frac{2 \ln x^2}{x^2 - 1}$$

$$12) \lim_{x \rightarrow 1^+} \frac{2x^2}{\ln x^2}$$

$$13) \lim_{x \rightarrow 1} \frac{2(x - 1)}{\ln x}$$

$$14) \lim_{x \rightarrow 0} \frac{x}{\tan(4x)}$$

$$15) \lim_{x \rightarrow 0} \frac{x^2}{e^x - x}$$

$$16) \lim_{x \rightarrow \infty} \frac{e^x}{2x^2}$$

$$17) \lim_{x \rightarrow 0^+} \frac{2(e^x + e^{-x})}{x}$$

$$18) \lim_{x \rightarrow \infty} \frac{x}{\ln x}$$

$$19) \lim_{x \rightarrow 0} \frac{e^{2x} - 1}{\sin(4x)}$$

$$20) \lim_{x \rightarrow \infty} \frac{x}{e^x}$$