

# LIMITS

Lesson 1: Estimating Limits

Lesson 2: Techniques for Evaluating Limits

Lesson 3: Properties of Limits

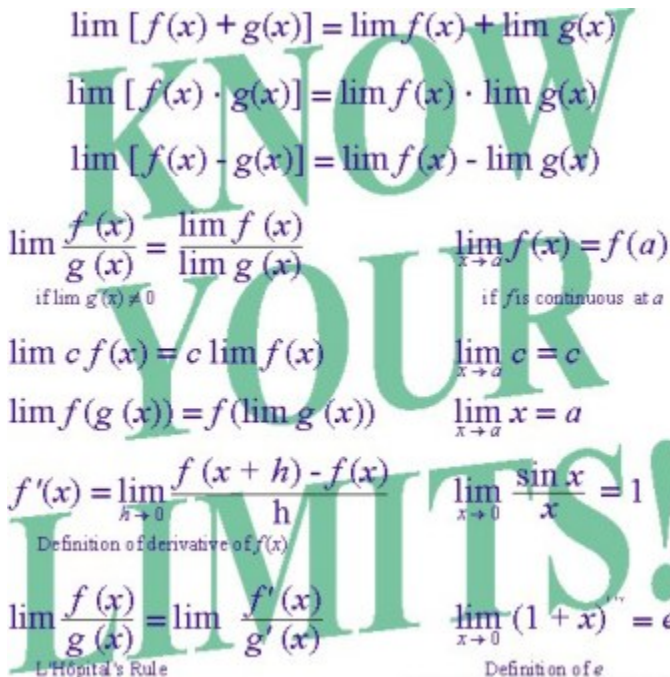
Lesson 4: Limits that Fail to Exist

Lesson 5: One-sided Limits

Lesson 6: Limits to Infinity

Lesson 7: Continuity

Lesson 8: Application of Limits


$$\begin{aligned}\lim [f(x) + g(x)] &= \lim f(x) + \lim g(x) \\ \lim [f(x) \cdot g(x)] &= \lim f(x) \cdot \lim g(x) \\ \lim [f(x) - g(x)] &= \lim f(x) - \lim g(x) \\ \lim \frac{f(x)}{g(x)} &= \frac{\lim f(x)}{\lim g(x)} \quad \text{if } \lim g(x) \neq 0 \\ \lim_{x \rightarrow a} f(x) &= f(a) \quad \text{if } f \text{ is continuous at } a \\ \lim c f(x) &= c \lim f(x) \\ \lim_{x \rightarrow a} c &= c \\ \lim f(g(x)) &= f(\lim g(x)) \\ \lim_{x \rightarrow a} x &= a \\ f'(x) &= \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \quad \text{Definition of derivative of } f(x) \\ \lim \frac{f(x)}{g(x)} &= \lim \frac{f'(x)}{g'(x)} \quad \text{L'Hopital's Rule} \\ \lim_{x \rightarrow 0} \frac{\sin x}{x} &= 1 \\ \lim_{x \rightarrow 0} (1+x)^{1/x} &= e \quad \text{Definition of } e\end{aligned}$$