

## 8.2 Limits of Functions

Functions:  $f(x)$ ,  $g(x)$

Argument:  $x$

Real constants:  $a$ ,  $k$

$$749. \lim_{x \rightarrow a} [f(x) + g(x)] = \lim_{x \rightarrow a} f(x) + \lim_{x \rightarrow a} g(x)$$

$$750. \lim_{x \rightarrow a} [f(x) - g(x)] = \lim_{x \rightarrow a} f(x) - \lim_{x \rightarrow a} g(x)$$

$$751. \lim_{x \rightarrow a} [f(x) \cdot g(x)] = \lim_{x \rightarrow a} f(x) \cdot \lim_{x \rightarrow a} g(x)$$

$$752. \lim_{x \rightarrow a} \frac{f(x)}{g(x)} = \frac{\lim_{x \rightarrow a} f(x)}{\lim_{x \rightarrow a} g(x)}, \text{ if } \lim_{x \rightarrow a} g(x) \neq 0.$$

$$753. \lim_{x \rightarrow a} [kf(x)] = k \lim_{x \rightarrow a} f(x)$$

$$754. \lim_{x \rightarrow a} f(g(x)) = f\left(\lim_{x \rightarrow a} g(x)\right)$$

$$755. \lim_{x \rightarrow a} f(x) = f(a), \text{ if the function } f(x) \text{ is continuous at } x = a.$$

$$756. \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

$$757. \lim_{x \rightarrow 0} \frac{\tan x}{x} = 1$$

$$758. \lim_{x \rightarrow 0} \frac{\sin^{-1} x}{x} = 1$$

$$759. \lim_{x \rightarrow 0} \frac{\tan^{-1} x}{x} = 1$$

$$760. \lim_{x \rightarrow 0} \frac{\ln(1+x)}{x} = 1$$

$$761. \lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e$$

$$762. \lim_{x \rightarrow \infty} \left(1 + \frac{k}{x}\right)^x = e^k$$

$$763. \lim_{x \rightarrow 0} a^x = 1$$