

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer, then...

$$\lim_{x \rightarrow c} b = b$$

$$\lim_{x \rightarrow c} x = c$$

$$\lim_{x \rightarrow c} x^n = c^n$$

$$\lim_{x \rightarrow 1} 4$$

$$\lim_{x \rightarrow 5} x$$

$$\lim_{x \rightarrow 2} x^3$$

$$\lim_{x \rightarrow -3} 8$$

$$\lim_{x \rightarrow -2} x$$

$$\lim_{x \rightarrow 6} x^2$$

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer,

$$\lim_{x \rightarrow c} f(x) = L$$

$$\lim_{x \rightarrow c} g(x) = K$$

Scalar Multiple Property

Example

$$\begin{aligned} \lim_{x \rightarrow c} [b \cdot f(x)] &= b \cdot [\lim_{x \rightarrow c} f(x)] \\ &= b \cdot L \end{aligned}$$

$$\lim_{x \rightarrow 1} (2x^2 + 6)$$

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer,

$$\lim_{x \rightarrow c} f(x) = L \quad \lim_{x \rightarrow c} g(x) = K$$

Sum or Difference Property

Example

$$\begin{aligned} \lim_{x \rightarrow c} [f(x) \pm g(x)] &= \lim_{x \rightarrow c} f(x) \pm \lim_{x \rightarrow c} g(x) & \lim_{x \rightarrow 2} (3x^2 - 4x) \\ &= L \pm K \end{aligned}$$

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer,

$$\lim_{x \rightarrow c} f(x) = L \quad \lim_{x \rightarrow c} g(x) = K$$

Product Property

Example

$$\begin{aligned} \lim_{x \rightarrow c} [f(x) \cdot g(x)] &= \lim_{x \rightarrow c} f(x) \cdot \lim_{x \rightarrow c} g(x) & \lim_{x \rightarrow 1} (x^2 - 9) \\ &= L \cdot K \end{aligned}$$

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer,

$$\lim_{x \rightarrow c} f(x) = L \quad \lim_{x \rightarrow c} g(x) = K$$

Quotient Property

Example

$$\lim_{x \rightarrow c} \frac{f(x)}{g(x)} = \frac{\lim_{x \rightarrow c} f(x)}{\lim_{x \rightarrow c} g(x)} = \frac{L}{K} \quad \lim_{x \rightarrow 3} \frac{2x - 5}{4x}$$

If  $b$  and  $c$  are real numbers and  $n$  is a positive integer,

$$\lim_{x \rightarrow c} f(x) = L \quad \lim_{x \rightarrow c} g(x) = K$$

Power Property

Example

$$\begin{aligned} \lim_{x \rightarrow c} [f(x)]^n &= [\lim_{x \rightarrow c} f(x)]^n \\ &= L^n \end{aligned} \quad \lim_{x \rightarrow 2} (x + 1)^2$$

$$\lim_{x \rightarrow c} b = b$$

$$\lim_{x \rightarrow c} x = c$$

$$\lim_{x \rightarrow c} x^n = c^n$$

Scalar Multiple Property

$$\lim_{x \rightarrow c} [b \cdot f(x)] = b \cdot L$$

Sum or Difference Property

$$\lim_{x \rightarrow c} [f(x) \pm g(x)] = L \pm K$$

Product Property

$$\lim_{x \rightarrow c} [f(x) \cdot g(x)] = L \cdot K$$

Quotient Property

$$\lim_{x \rightarrow c} \frac{f(x)}{g(x)} = \frac{L}{K}$$

Power Property

$$\lim_{x \rightarrow c} [f(x)]^n = L^n$$