

Let a and c be constants. Then

Constant Rule for Limits:
$$\lim_{x \rightarrow a} c = c$$

Rule X for Limits:
$$\lim_{x \rightarrow a} x = a$$

And as long as $\lim_{x \rightarrow a} f(x)$ and $\lim_{x \rightarrow a} g(x)$ exist,

Sum Rule for Limits:
$$\lim_{x \rightarrow a} [f(x) + g(x)] = \lim_{x \rightarrow a} f(x) + \lim_{x \rightarrow a} g(x)$$

Difference Rule for Limits:
$$\lim_{x \rightarrow a} [f(x) - g(x)] = \lim_{x \rightarrow a} f(x) - \lim_{x \rightarrow a} g(x)$$

Constant Multiple Rule for Limits:
$$\lim_{x \rightarrow a} [c \cdot f(x)] = c \cdot \lim_{x \rightarrow a} f(x)$$

Product Rule for Limits:
$$\lim_{x \rightarrow a} [f(x) \cdot g(x)] = \lim_{x \rightarrow a} f(x) \cdot \lim_{x \rightarrow a} g(x)$$

Quotient Rule for Limits:
$$\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = \frac{\lim_{x \rightarrow a} f(x)}{\lim_{x \rightarrow a} g(x)}$$
 as long as $\lim_{x \rightarrow a} g(x) \neq 0$.

Power Rule for Limits:
$$\lim_{x \rightarrow a} [f(x)]^n = \left[\lim_{x \rightarrow a} f(x) \right]^n$$