

14.2 Algebraic Techniques for Limits – Limit Theorems

Theorem

Limit of a Constant

For the constant function $f(x) = A$

$$\lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} A = \underline{\hspace{2cm}}$$

Theorem

Limit of x

For the identity function $f(x) = x$

$$\lim_{x \rightarrow c} f(x) = \lim_{x \rightarrow c} x = \underline{\hspace{2cm}}$$

Theorem

Limit of a Sum

$$\lim_{x \rightarrow c} [f(x) + g(x)] = \underline{\hspace{2cm}}$$

Theorem

Limit of a Difference

$$\lim_{x \rightarrow c} [f(x) - g(x)] = \underline{\hspace{2cm}}$$

Theorem

Limit of a Product

$$\lim_{x \rightarrow c} [f(x) \cdot g(x)] = \underline{\hspace{2cm}}$$

Theorem

Limit of a Monomial

$$\lim_{x \rightarrow c} (ax^n) = \underline{\hspace{2cm}}$$

Theorem

Limit of a Polynomial

If P is a polynomial function, then

$$\lim_{x \rightarrow c} P(x) = \underline{\hspace{2cm}}$$

Theorem

Limit of a Power or Root

If $\lim_{x \rightarrow c} f(x)$ is known and if $n \geq 2$ is a positive integer, then

$$\lim_{x \rightarrow c} [f(x)]^n = \underline{\hspace{2cm}}$$

and

$$\lim_{x \rightarrow c} \sqrt[n]{f(x)} = \underline{\hspace{2cm}}$$