

## Section 5.1 Continuous Functions

Let  $A \subseteq \mathbb{R}$ ,  $f : A \rightarrow \mathbb{R}$ ,  $c \in A$ . Then  $f$  is continuous at  $c$  if  $\forall \epsilon > 0, \exists \delta(c, \epsilon) > 0$  such that  $|f(x) - f(c)| < \epsilon$  if  $|x - c| < \delta$ .

Let  $f : A \rightarrow \mathbb{R}$ . If  $B \subseteq A$ , then  $f$  is continuous on  $B$  if  $f$  is continuous at every point of  $B$ .

**Sequential Criterion for Continuity**  $f : A \rightarrow \mathbb{R}$  is continuous at  $c \in A$  if and only if for every sequence  $(x_n)$  in  $A$  that converges to  $c$ ,  $(f(x_n))$  converges to  $f(c)$ .