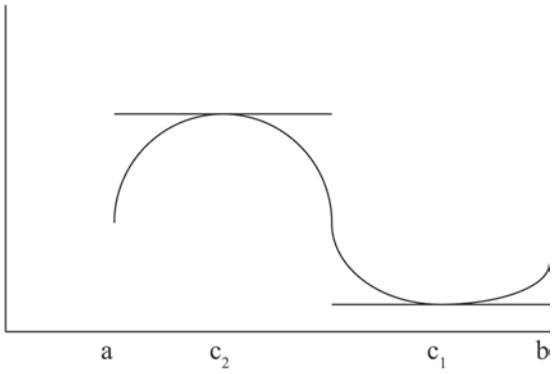
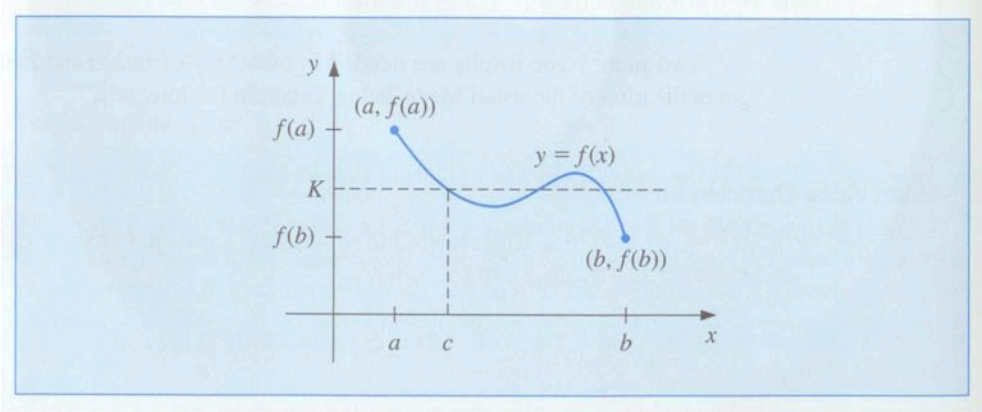
THEOREM (Extreme Value Theorem). *If $f \in C[a,b]$, then $c_1, c_2 \in [a,b]$ exist with $f(c_1) \leq f(x) \leq f(c_2)$ for all $x \in [a,b]$. In addition, if f is differentiable on (a,b), then c_1 and c_2 occur either at the endpoints of $[a,b]$ or where f' is zero.*



THEOREM (Intermediate Value Theorem). *If $f \in C[a,b]$ and K is any number between $f(a)$ and $f(b)$, then there exists $c \in (a,b)$ such that $f(c) = K$.*



COROLLARY (Intermediate Value Theorem). *If $f \in C[a,b]$ and $f(a)f(b) < 0$, then there exists $c \in (a,b)$ such that $f(c) = 0$.*

NOTE. This corollary is often used in approximating roots of equations.