

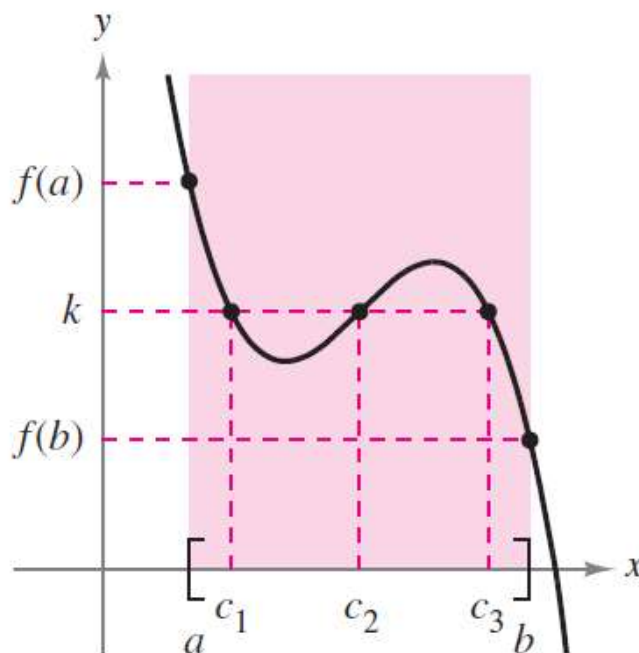
The Intermediate Value Theorem

w-up: AP Multiple Choice Packet #79

If $f(x) = x^3 - 2x + 5$, find $f(-4)$ & $f(0)$ and use those values to explain why a zero **MUST** occur in the interval $[-4, 0]$.

The Intermediate Value Theorem

Let $f(x)$ be continuous on $[a, b]$ and let K be some value between $f(a)$ and $f(b)$ then there **MUST** exist an $x \in [a, b]$ such that $f(x) = K$.



f is continuous on $[a, b]$.

[There exist three c 's such that $f(c) = k$.]

Using the IVT to find zeros(roots)

If you can determine that $f(x)$ is continuous on the interval $[a, b]$ AND $f(a)$ and $f(b)$ are opposite signs then there MUST be at least one zero(root) in that interval $[a, b]$.

EX) Use the IVT to find a zero for $f(x) = -2x^3 + 3x - 1$ using only a scientific calculator.

[SQUEEZE THEOREM VIDEO](#)