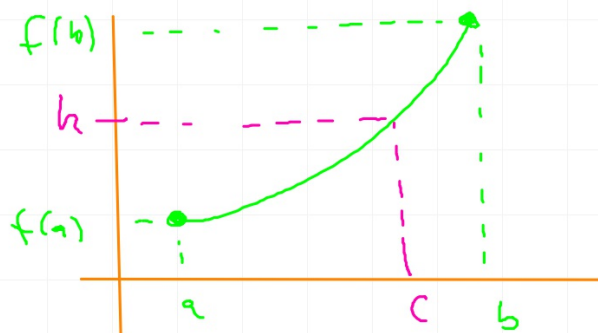


Intermediate Value Theorem

If f is cont. on $[a, b]$ then
 $\forall k \in (f(a), f(b)) \exists c \in (a, b) \ni$
 $f(c) = k.$



Given $f(x) = 2 + x - x^2$ on $[0, 3]$ and $k = 1$,
find $c \in f(c) = k$.

$$2 + x - x^2 = 1 \rightarrow x = -.618 \text{ or } x = 1.618$$

$$-.618 \notin (0, 3) \therefore c = 1.618$$

Show that $f(x) = x^3 - 2x^2 + x - 5$ has a zero on $[2, 3]$.

Since $f(2) = -3$ and $f(3) = 7$ then
by IVT $f(x) = 0$ for some $x \in (2, 3)$.

Show that $x^3 - 2x^2 = 5 - x$ has a root
between $x = 2$ and $x = 3$.

Let $f(x) = x^3 - 2x^2 + x - 5$.

$\therefore x^3 - 2x^2 = 5 - x$ has a root
between $x = 2$ and $x = 3$.