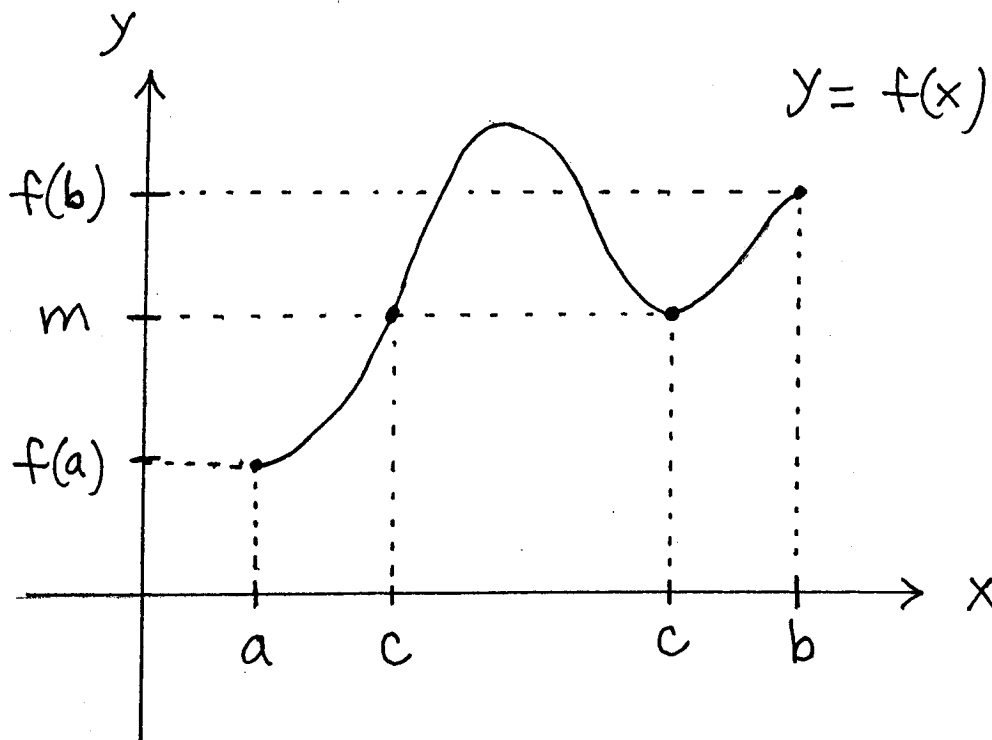


Math 21A  
Kouba  
The Intermediate Value Theorem (IMVT)

Intermediate Value Theorem (IMVT) : Let  $f$  be a continuous function on the closed interval  $[a, b]$ . Let  $m$  be any number between  $f(a)$  and  $f(b)$ . Then there is at least one number  $c$  in  $[a, b]$  which satisfies

$$f(c) = m .$$



When applying the IMVT to a problem, the following five steps must be clearly established:

1. Define a function  $f$ .
2. Define a number  $m$ .
3. Establish that  $f$  is continuous.
4. Choose an interval  $[a, b]$ .
5. Indicate that  $m$  is between  $f(a)$  and  $f(b)$ .

Once these five steps have been established, the conclusion of the IMVT can be invoked.