Quick Review Test

→ function f has a local minimum at $x=c$ if for all x's in an interval around "c" we have ________.

T/F → If the point $(c, f(c))$ is a local maximum of the function f, then either $f'(c)=0$ or $f'(c)$ is NOT defined.

T/F → If at $x=c$, function f has a horizontal tangent line or if there's NO tangent line at "c" then f has a local extremum at "c"

→ $x=c$ is a critical number of f means ________

T/F → Local extremum always occurs at a critical point.

T/F → Critical numbers are local extrema.

Quick Review

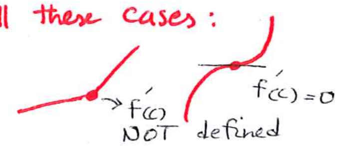
Solution.

→ function f has a local minimum at $x=c$ if for all x's in an interval around "c" we have $f(c) \le f(x)$

T/F → If the point $(c, f(c))$ is a local maximum of the function f, then either $f'(c)=0$ or $f'(c)$ is NOT defined.

T/**F** → If at $x=c$, function f has a horizontal tangent line $\underbrace{}_{f'(c)=0}$ or if there's NO tangent line at "c" $\underbrace{}_{f'(c)\text{ NOT defined}}$ then f has a local extremum at "c"

Recall these cases:



→ $x=c$ is a critical number of f means $f'(c)=0$ or $f'(c)$ NOT defined

T/F → Local extremum always occurs at a critical point.

T/**F** → Critical numbers are local extrema.

Recall:

- If the function f has a local extremum at $x=c$ then $f'(c)=0$ or $f'(c)$ NOT defined. 

- But if $f'(c)=0$ or $f'(c)$ is NOT defined, it's NOT necessarily a local extremum. We have cases such as 
These are critical numbers, only candidates of local extrema.