Second Derivative Test (SDT) : Suppose that f'' is continuous on an open interval containing c with $f'(c)=0$:

If $f''(c)>0$, then f has a local minimum at c

If $f''(c)<0$, then f — " — maximum at c.

If $f''(c)$: test is inclusive.

Summary

- Critical points $\subseteq \{x \mid f'(x)=0\}$
  - First derivative Test : $c \in I$, f differentiable on I, except point at c.

$f'(x)$: $+ \underset{c}{\rightarrow} - \Rightarrow f$ has local max on c.

$- \underset{c}{\rightarrow} + \Rightarrow$ — " — min at c

No change in sign : f has no local extremum at c.

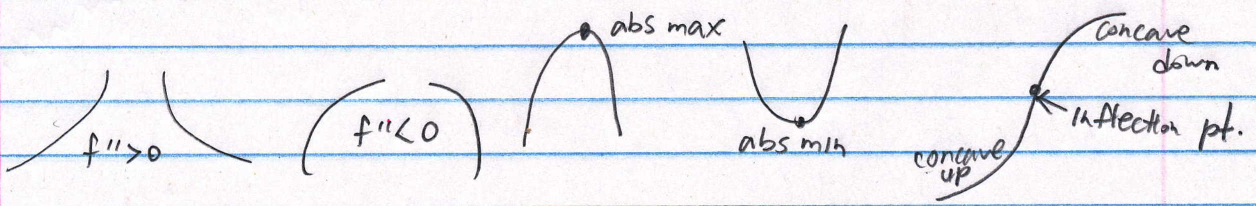
f : $f'<0$, $f'>0$?	$f' \uparrow$ on $I \Rightarrow$ Concave up
Decreasing Increasing	$f' \downarrow$ on $I \Rightarrow$ Concave down

f continuous at c, changes concavity at $c \Rightarrow f$ has an inflection point at c

Caution : $f''(c)=0$ need not imply that f has an inflection point

SDT : I open interval, $c \in I$, $f'(c)=0$

- If $f''(c)>0$, then f has a local min at c.
- If $f''(c)<0$, — " — " — max at c.



* End of session *