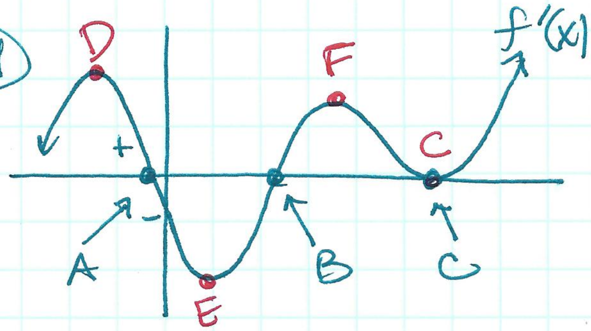
HW $\boxed{\text{DAY 60}}$ p.192–196 #24–30 all, 32.

(24)



CRITICAL POINTS occur when $f'(x)=0$ on $f(x)$

@ $x = A, B, C$

$f(A)$ is a Rel MAX b/c f' changes (+) to (−)
$f(B)$ is a Rel MIN b/c f' changes (−) to (+)
$f(C)$ is a Terrace pt (so neither)
b/c f' does not change signs (+) to (+).

(25) $\boxed{\text{Use \#24 Same graph}}$ $f(x)$ has inflection points when $f'(x)$ has extrema.

$f''(x)$ changes sign (+) to (−) at $x = D, F$ ∴ $(D, f(D))$ & $(F, f(F))$ are inflection pts.

$f''(x)$ changes sign (−) to (+) at $x = E, C$ ∴ $(E, f(E))$ & $(C, f(C))$ are inflection pts.

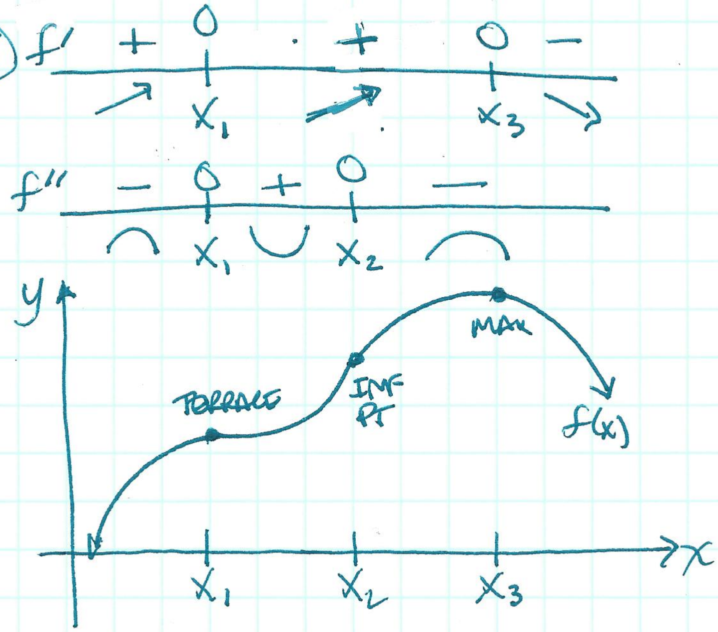
(26) $\boxed{\text{use \#24 Same graph but call it } f''(x)}$

Possible inflection points on $f(x)$ occur when $f''(x) = 0$ at $x = A, B, C$.
Inflection points only occur when there is a change in sign. (+) to (−) or (−) to (+).

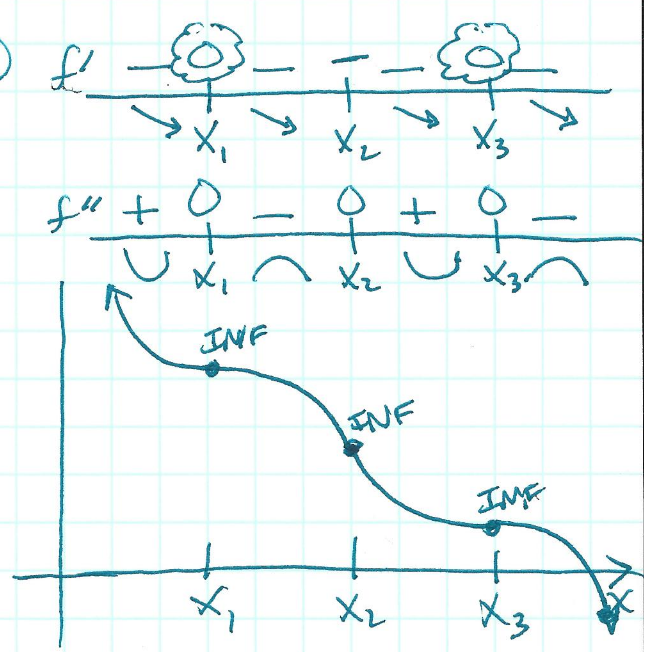
∴ $f(x)$ has inflection points at
$(A, f(A))$ b/c f'' changes (+) to (−)
$(B, f(B))$ b/c f'' changes (−) to (+).

No inflection pt at $(c, f(c))$
b/c f'' does not change signs.

(27)



(28)



HW $\boxed{\text{DAY 60}}$ p. 192–196 # 29–30, 32

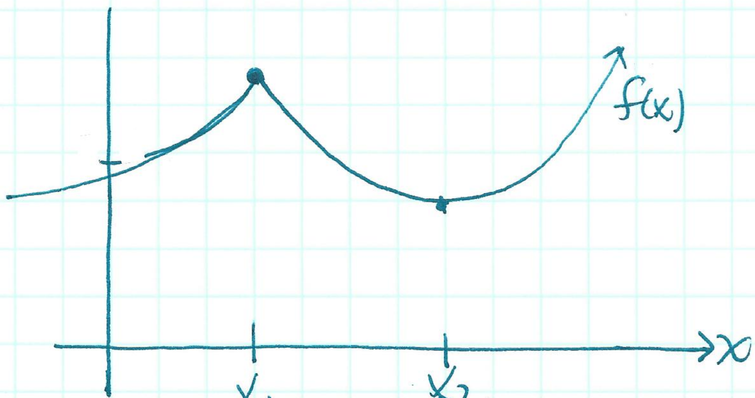
29) $f(x)$ is continuous so ← sharp pt or ~~vertical tangent~~ X

f': $+$ | $\cancel{0}$ at x_1 | $-$ | 0 at x_2 | $+$

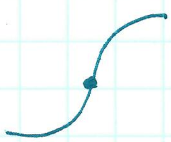
↗ x_1 ↘ x_2 ↗

f'': $+$ | $\cancel{0}$ at x_1 | $+$

∪ x_1 ∪



X can't have vertical tangent



because concavity would change.

30) f': $y' = 2$ | 2 at x_1 | $+$

↗ constant slope x_1 ↗

f'': $y'' = 0$ | 0 | $+$

no concavity

maybe $y = \begin{cases} 2(x-4)+2, & x \le 4 \\ (x-3)^2+1, & x > 4 \end{cases}$

32) a) Rel MAX: (1,2), (8,3)

Rel MIN: (4,−5), $\underbrace{(10,-1), (0,1)}_{\text{endpts.}}$

} If table is $y = f(x)$

b) If table $y = f'(x)$

CRITICAL POINTS where $f'(x) = 0 \Rightarrow x = 2.5, 6.5, 9.5$ estimates

$f(2.5)$ rel max b/c $f'(x)$ changes $+$ to $-$

$f(6.5)$ rel min b/c $f'(x)$ changes $-$ to $+$

$f(9.5)$ rel max b/c $f'(x)$ changes $+$ to $-$