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10/12/09

Test; mult. choice & free resp. out of 108
- Rolle & MVT
- closed interval theorem
- how many rel max/min
- f' when in/dec
- concavity
- inflection point
- $\lim_{x \to a}$ question
- f' graph w/ questions (like on board)
- justify max & min
- inflection points - f'' changes signs or f' goes inc → dec
  - MVT question
  - graph
- HA & VA question
- graph - inc/dec, concavity
- No proofs! (do have to justify answer) with words!

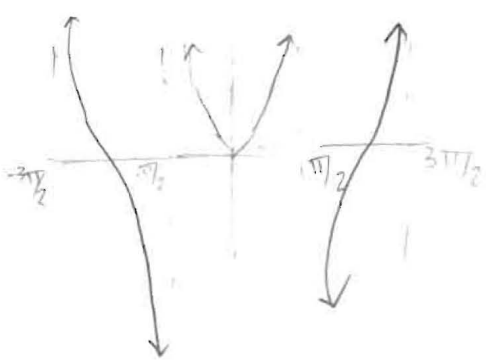
pg 216
#45. $y = x\tan x \quad \left(\frac{-3\pi}{2}, \frac{3\pi}{2}\right)$

$y' = \tan x + x\sec^2 x$

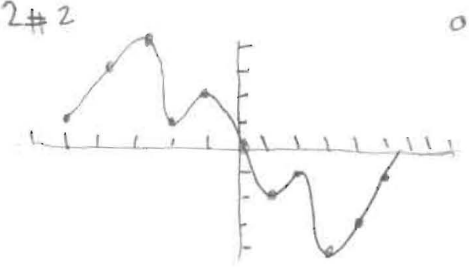
$= \frac{\sin x \cos x + 1}{\cos^2 x}$

$= \frac{\frac{1}{2}\sin 2x + x}{\cos^2 x}$

· Rel. min $(0, 0)$
VA $\frac{1}{2} + k\pi$




pg242 #2
c.



odd, so can extrapolate points

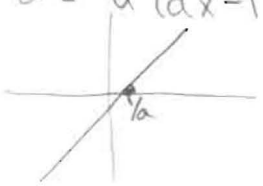
- 6 critical numbers

pg 217 #72

$f(x) = \frac{1}{2}(ax)^2 - (ax)$

$f'(x) = a^2x - a = a(ax-1)$

if $a > 0$




dec $(-\infty, \frac{1}{a})$ inc $(\frac{1}{a}, \infty)$

abs min $(\frac{1}{a}, -1/2)$

pg 215 #24

$f(x) = y = 3(x-1)^{2/3} - (x-1)^2$

$(x-1)^{2/3}(3 - (x-1)^{4/3})$

$y' = 2(x-1)^{-1/3} - 2(x-1)$

$2(x-1)^{-1/3}(1 - (x-1)^{4/3})$

$= \frac{2(1-(x-1)^{4/3})}{(x-1)^{1/3}}$

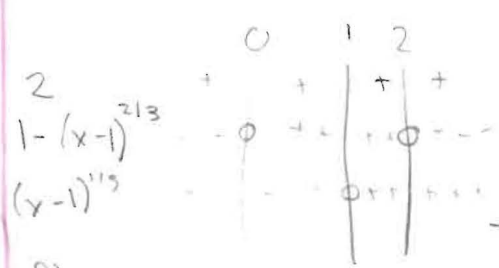
- xint $(1,0)$, $(1 \pm \sqrt[4]{27}, 0)$

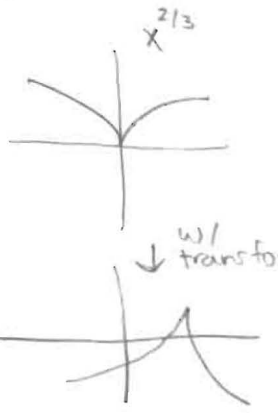
  $3 = (x-1)^{4/3}$

  $\pm\sqrt[4]{27} = x-1$

  $x = 1 \pm \sqrt[4]{27}$

- yint: $(0,2)$
- relmax $(0,2)$ $(2,2)$
- relmin $(1,0)$




f(x)