Sec 2.8 day 1 page 162 (1-5, 8, 10)

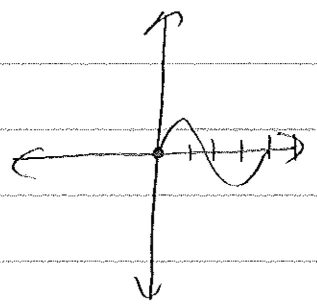
(1) a) $f \uparrow$ when f' + so on $(0,1)$ and $(4,5)$

$f \downarrow$ when f' − so on $(1,4)$

b) $x=1$ local max

$x=4$ local min

c)



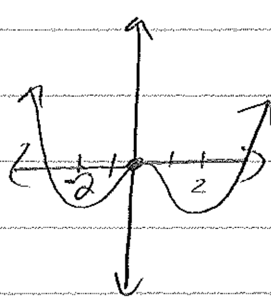
(2) a) $f \uparrow$ on $(-2,0)$ and $(2,3)$

$f \downarrow$ on $(-3,-2)$ and $(0,2)$

b) $x=0$ local max

$x=-2$ and $x=2$ local min

c)



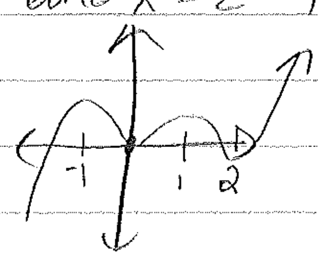
(3) a) $f \uparrow$ on $(-2,-1)$, $(0,1)$, and $(2,3)$

$f \downarrow$ on $(-1,0)$ and $(1,2)$

b) $x=-1$ and $x=1$ local max

$x=0$ and $x=2$ local min

c)



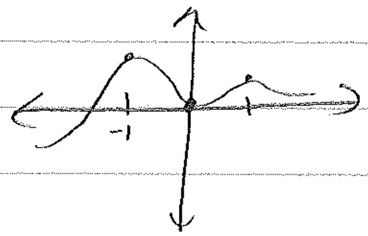
(4) a) $f\uparrow$ on $(-2,-1)$ and $(0,1)$

$f\downarrow$ on $(-1,0)$ and $(1,2)$

b) $x=-1$ and $x=1$ local max

$x=0$ local min

c)



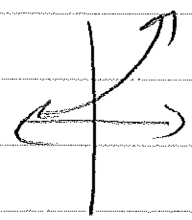
(5) $f'\uparrow$ when f'' is $+$, $f''+$ when f CU

so $f'\uparrow$ on $(2,5)$.

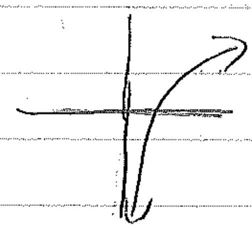
$f'\downarrow$ when f'' is $-$, $f''-$ when f CD

so $f'\downarrow$ on $(-\infty,2)$ and $(5,\infty)$

(8) a)



b)



c) $y=e^x$

$y=\ln x$

(10) a) The rate of increase in the population is initially very small, then gets larger until it reaches a maximum at about $t=8$ hours, and decreases toward 0 as the population begins to level off.

b) $t=8$ hours

c) CU on $(0,8)$ CD on $(8,18)$

d) IP is when graph changes concavity

so at @ $(8,350)$