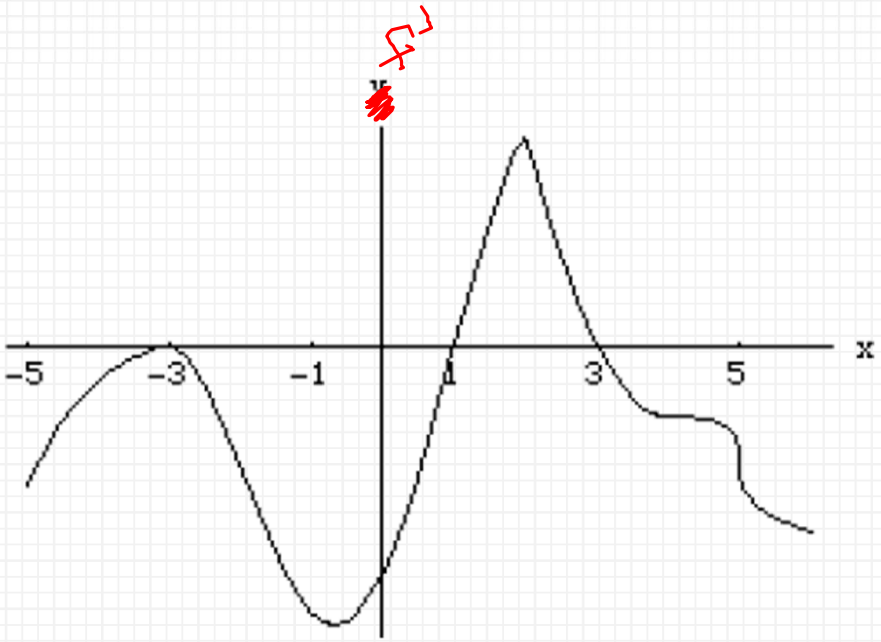


1) The critical points for f are $x =$ $-3, 1, 3$

$f' = 0$ OR f' DNE

2) The critical points for f' are $x =$ $-3, -1, 2, 5, 4$

$f'' = 0$ OR f'' DNE

3) f has a local maximum when $x =$ 3

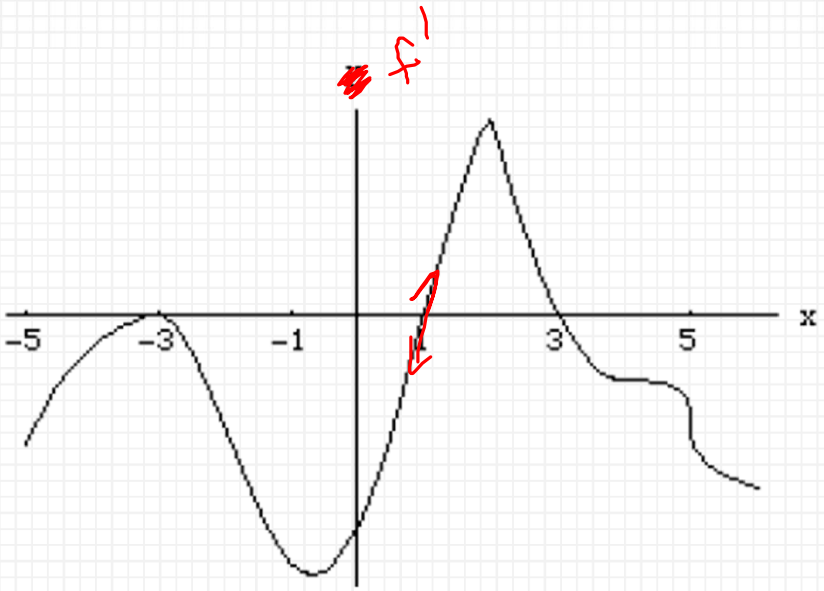
$f'(3) = 0$ + f' CHANGES FROM + TO −

4) f has its maximum value on $[-5, 6]$ when $x =$ -5

$f(-5) > f(2) > f(4)$ $f(3) > f(6)$

5) f is decreasing on the interval(s)

$[-5, 1] \cup [3, 6]$ $f' < 0$



$(-5,-3) \cup (-1,2)$

6) The graph of f is concave up on the interval(s)

f' INCREASING $\Rightarrow f'' > 0$

7) The x-coordinates of the points of inflection are $x =$ $-3, -1, 2$

f' CHANGES FROM INCR TO DECR OR DECR TO INCR

8) f' has its maximum value when $x =$ 2

9) f'' has its maximum value when $x =$ 1

10) Does f' have a minimum value on $[-5, 6]$? Explain.

YES — EVT (f' CONT on $\mathcal{D}$)

11) Does f'' have a minimum value on $[-5, 6]$? Explain.

NO — f'' NOT CONT. @ $x=5$

$f''(5) = DNE$

x	$f(x)$	$f'(x)$	$f''(x)$
2	6	2	−8
4	12	0	−1
6	15	3	0
8	20	4	5
10	25	2	6

F 1) f has a local minimum at $x = 8$

$f'(8) \neq 0$

T 2) f has a local maximum at $x = 4$

$f'(4) = 0$, $f''(4) = -1 < 0 \Rightarrow$ MAX

? 3) f has a POI when $x = 6$

T 4) f has a POI on the interval $6 < x < 10$

f' CHANGES FROM INC TO DEC

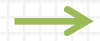
F 5) f is increasing on $[2, 10]$

MAX @ $x = 4$ (SEE #2)

T 6) $f(x) = 17$ has a solution in $[2, 10]$ IVT

$f(2) = 6$ AND $f(10) = 25 \Rightarrow$ BY IVT

$f(c) = 17$ FOR SOME $2 \leq c \leq 10$



x	$f(x)$	$f'(x)$	$f''(x)$
2	6	2	−8
4	12	0	−1
6	15	3	0
?		2.5	
8	20	4	5
10	25	2	6

MSEC = 2.5

? 7) $f'(x) = 2.25$ has a solution in $[6, 8]$

T 8) $f'(x) = 2.50$ has a solution in $[6, 8]$ MVT

T 9) $f'(x) = 2.75$ has a solution in $[6, 8]$ IVT

? 10) The line $y = 15$ is a horizontal asymptote.

F 11) The line $x = 7$ is a vertical asymptote.

f CONT.

Homework/Classwork:

AP Packet #30 – 36, 41 – 45