

5.2 - SECOND DERIVATIVE AND CONCAVITY

Partition numbers from the second derivative are possible inflection points (change of concavity):

$$f''(x) = 0 \quad \text{or} \quad f''(x) \text{ is undefined}$$

Test each side of the partition number using a sign chart:

$$f'' \quad + \quad \Rightarrow \quad f \text{ is concave up}$$

$$f'' \quad (-) \quad \Rightarrow \quad f \text{ is concave down}$$

THE SECOND DERIVATIVE TEST

COMPUTE $f''(c)$ for EACH critical point c found from f' .

RESULTS:

$f''(c)$.

for f

negative

confirms local maximum at c

positive

confirms local minimum at c

zero

test fails and is inconclusive

5.2 HW # 1 - 41 (every other odd)