



Problem Set 21: Second Derivative Test

Find the relative (local) extrema using the **second derivative test**. If the second derivative test is inconclusive, indicate as such.

1. $f(x) = x^3 - 3x + 1$

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

AP Calculus AB – Unit 4

Dan the Tutor



Learn by Doing

3. $f(x) = (x + 3)(x - 2)$

4. $f(x) = (x - 5)^4$



Using the table, determine the relative extrema of $f(x)$.

5.

x	$f(x)$	$f'(x)$	$f''(x)$
-1	4	0	4
3	11	1	0
5	8	-5	3
10	6	0	-8

6.

x	$f(x)$	$f'(x)$	$f''(x)$
9	$3/2$	$-4/3$	1
5	-3	0	0
4	$7/4$	-2	$8/9$
2	5	0	$-1/4$

7. Given that $f'(2) = 0$, $f''(2) = 3$, $f'(5) = 0$, $f''(5) = -5$, determine the maximums and minimums of the function.

8. Given that $f'(0) = 4$, $f''(0) = -4$, $f'(-2) = 0$, $f''(-2) = 1$, $f'(1) = 0$, $f''(1) = 3$ determine the maximums and minimums of the function.