

## **Math Quest on on 2-6, 3-1, 3-3 (70 points)**

- 5 problems
  - Motion
  - Multiple derivatives
  - Concepts and applications
    - Graph of derivative, draw original function
    - Ex. Given 2<sup>nd</sup> derivative, find fourth
  - A complete graph worth 30 points
    - Different parts such as increasing and decreasing, extrema(relative minimum and maximum) inflection points, concave up and down
- No graphing calculators, bring scientific.
- 1 side of page is on the graph
- 2-6 – Higher-Order Derivatives
  - HW Pgs. 147-148, 168-169(#'s 43,44, 79-81);  $f''(x)$  WS from 12/07/11
  - Example – Position function, velocity(first derivative), acceleration (second derivative)

- 3-1 – Increasing and Decreasing Functions
  - HW Pgs. 179-180
  - Critical Numbers – where  $f'(x)=0$  or is undefined; where signs change
  - Use table:

Interval		
Test value		
Sign of $f'(x)$		
Conclusion		

- 3-3 – Concavity and the Second-Derivative Test
  - HW Pgs. 198-199 (and 252)
  - Concavity – find where  $f''(x)=0$  or is undefined; test the sign of  $f''(x)$  in each interval; either concave upward or downward
  - Use table

Interval		
Test value		
Sign of $f''(x)$		
Concavity		

- Points of inflection

**See small sheet with procedure for finding extrema and inflection points**

## Worksheets

- $f(x)$  vs  $f'(x)$  WS
- Recent packet
  - $f(x), f'(x), f''(x)$  WS
  - WS 2-6
  - MAA Review 2-6, 3-1, 3-3