Mathematics 122

Quiz #24 Name: Key

You must show your work to get full credit.

1. Find the inflection points (if any) of $y = x^3 - 3x^2 + 5x + 1$ Give both the x and y coordinates. (That is write the answer as an ordered pair (x, y).)

$y' = 3x^2 - 6x + 5$

$y'' = 6x - 6 = 0$

so $x = 1$ (This is where y'' changes sign)

Inflection point is $(1, 4)$

$y(1) = 1^3 - 3(1)^2 + 5(1) + 1 = 1 - 3 + 5 + 1 = 7 - 3 = 4$

2. Let $f(x)$ be a function so that

- $f'(x) < 0$ when $x < 1$ and $x > 3$.
- $f'(x) > 0$ when $1 < x < 3$.
- $f''(x) > 0$ for $x < 2$.
- $f''(x) < 0$ for $x > 2$.

Draw a graph of $y = f(x)$ where you label, on the graph, all the local maximums, local minimums, and inflection points.