

Name: _____

QUIZ 6
October 9, 2001

Calculators are not allowed!

Consider the function

$$f(x) = \frac{1}{3}x^3 - x^2 - 8x + 1.$$

(a) Find the critical points of $f(x)$.

(b) For each critical point determine if it is a local maximum, minimum, or plateau (horizontal point of inflection).

(c) Find the points of inflection of $f(x)$.

(d) Sketch the graph of $f(x)$.

Solutions to Quiz 6

(a) Compute $f'(x) = x^2 - 2x - 8 = (x - 4)(x + 2)$. Thus the critical points are $x = 4$ and $x = -2$.

(b) Compute $f''(x) = 2x - 2$. Since $f''(4) > 0$ and $f''(-2) < 0$, we conclude $x = 4$ gives a local minimum, while $x = -2$ gives a local maximum.

(c) To compute points of inflection, we set $f''(x) = 2x - 2 = 0$. So $x = 1$ is the only point of inflection.

(d)