Quiz #6 Math 101 Semester 041

Name:	I.D.	Sec.#

Q1. Use Newton method to estimate $\sqrt[3]{8.01}$ with $x_0 = 2$ (one iteration)

$$f(x) = x^3 - 8.01 = 0$$

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)} = x_n - \frac{x_n^3 - 8.01}{3x_n^2}$$

$$x_1 = 2 - \frac{2^3 - 8.01}{3(4)} = 2 - \frac{-0.1}{12} = 2 + \frac{1}{12}$$

Q2. verify that the function $f(x) = x^2 + 2x$ satisfies the hypotheses of The Mean Value theorem on the interval [-1, 1]. Then find a number c that satisfy its conclusion on this interval.

$f(x) = x^2 + 2x$ cont & diff. because it is polynomial

$\Rightarrow$ Satisfy MVT.

$$f'(c) = 2c + 2 = \frac{f(1) - f(-1)}{1 + 1} = \frac{3 - (1 - 2)}{2} = 2$$

$$2c = 0$$

$$\boxed{c = 0}$$