(5th Assignment is due on May 11th. The paper work must be submitted on the class.)

(1) Assume that f: [a,b]$\rightarrow R$ is a twice continuously differentiable function with $x^* \in (a, b)$ such that $f(x^*) = 0$ and $f'(x^*) \neq 0$. Please shows that there exists a $\delta > 0$ such that the sequence of $\{x_n\}$ generated by Newton's method converges to x^* when $x_0 \in (x^* - \delta, x^* + \delta)$.

(2) Assume that $f(x) = -x^4 + 3x^2 + 2$ defined on R. Please find a root of $f(x)$.