Chapter 2 Solutions of Equations in One Variable

Newton-Raphson Method

Given $f(x) \in C^2[a,b]$, to find the root of $f(x) = 0$ by Newton-Raphson method is to compute the iteration, given p_0, $p_{n+1} = p_n - f(p_n)/f'(p_n)$ until $|p_n - p_{n-1}| \le$ TOL or $|f(p_n)| \le$ TOL . From the graph, we an see p_{n+1} is the intersection of the tangent line of $y = f(x)$ with the tangent point $(p_n, f(p_n))$ and the x axis.

References:

【1】 R. L. Burden and J. D. Faires, *Numerical Analysis*, PWS, Boston, 1993.