

Chapter 2 Solutions of Equations in One Variable

Secant Method

To find the root of $f(x) = 0$ by Secant method is to compute the iteration, given p_0 and p_1 ,

$$p_n = p_{n-1} - \frac{f(p_{n-1})(p_{n-1} - p_{n-2})}{f(p_{n-1}) - f(p_{n-2})},$$

until $|p_n - p_{n-1}| \leq \text{TOL}$ or $|f(p_n)| \leq \text{TOL}$. From the graph, we can see p_n is the intersection of the secant line passing through $(p_{n-1}, f(p_{n-1}))$ and $(p_{n-2}, f(p_{n-2}))$ and the x axis.

References:

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