

Müller's Method:

For a number of root finding problems, Secant, False position and Newton's methods will not give satisfactory results. They don't provide rapid convergence, for example, when the function and its derivative are simultaneously close to zero. In addition, none of the methods, Newton-Raphson, Secant, Fixed point iteration ~~and~~ methods etc can produce an approximation of a complex root starting from real approximations. The Muller method is capable of doing so.

Starting with two initial guesses x_0 and x_1 , Secant method finds next approximation x_2 as the x -intercept of the line passing through $(x_0, f(x_0))$ and $(x_1, f(x_1))$.

In Müller method, we need to take three initial guesses x_0, x_1, x_2 , the next approximation x_3 is obtained as the x -intercept of the parabola P passing through $(x_0, f(x_0)), (x_1, f(x_1))$ and $(x_2, f(x_2))$

x_3 is taken close to x_2 .

In Muller method x_3 is obtained as follows:

Step I. Find parabola P passing through $(x_0, f(x_0)), (x_1, f(x_1))$ and $(x_2, f(x_2))$