$f(x) = x^2 - 3$

$x_0 = 1.65$

$e_0 < \frac{1}{M}$

$x_1 = 1.7 \longrightarrow 7.3 \times 10^{-2}$

$x_2 = 1.7328 \rightarrow 7.9 \times 10^{-6}$

$x_3 = 1.7320 \rightarrow 7.3 \times 10^{-6}$

$x_4 = 1.7321 \rightarrow 1.7 \times 10^{-9}$

$x_5 = 1.73211 \rightarrow 3.6 \times 10^{-15}$

$$e_{k+1} \leq M e_k^{\alpha}$$

Newton's Method $\alpha = 2$

Secant Method $\alpha = \frac{1}{2}(1+\sqrt{5})$

$= 1.62$

$1 < \alpha < 2$