Newton's method

Suppose we wish to approximate a solution of $f(x) = 0$. If x_0 is an initial approximation, then Newton's method generates the following sequence of "improved" approximations:

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}; \quad n = 0, 1, 2, 3, \ldots$$