Newton

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Algorithm 1 Newton

procedure NEWTON
    Tolerancia,X_a*,iterations*
    $F_x = F(X_0)$
    $\delta f(x) = f'(x_0)$
    Counter = 0
    error = tolerance +1
    while $f(x) \neq 0$ & *error* > *tolerancia* & *counter* < *iterations* **do**
        $X_1 = x_0 - \frac{f(x)}{\delta f(X)}$
        $F(x) = F(X_1)$
        error $= |X_n - X_0|$
        $X_0 = X_1$
        Counter++
    end while
    if $f_x = 0$ **then**
        X_a*is a root*
    else if *error* < *tolerance* **then**
        X_0*"It approximates with a tolerance + tolerance*
    else
        "FAIL after"+ niteraciones +"iterations"
    end if
end procedure