

**COMPARISON BETWEEN NEWTON'S METHOD AND A NEW
SCALING NEWTON METHOD**

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ABSTRACT

Newton's Method also called the Newton-Raphson method is a recursive algorithm for approximating the root of a differentiable function. Being one of the most widely used method of root finding, the procedure attempt to find a solution of the equation $f(x) = 0$ where $f(x)$ is a function of one variable, continuous and differentiable.

In Newton's method, approximation is done by using tangential lines. The solution process begins with choosing a value as the first estimate of the solution (normally obtained from graphing). This initial value is often called the "initial guess". The second estimate is obtained by using the tangent line of $f(x)$ at the initial value. The third estimate is obtained by using the tangent line of $f(x)$ at the second estimate. The process goes on and on until desired accuracy is achieved.

However, in some case it will become failure. When the approximations produced by Newton's method approach the desired zero, we say that the method converges to that zero. Depending on the initial approximation and the function, Newton's method may not converge to the desired zero.

When using Newton's method, consideration must be given to the proper choice of starting point or initial value. Usually, one must have some insights as to the shape of the function. Many times, a rough graph is adequate, but in other cases step-by-step evaluation of the function at various points may be necessary to locate the root.

The objective of this research is to compare two numerical method by using Newton method and New Scaling Newton method. The data taken from CLIMATE-DATA.ORG and from the data, we found initial value for our method. The higher accuracy of the result will be defined by calculating the numerical method and compared with the original data. Therefore, in this study, perhaps the researchers will compare the best method between Newton Method and New Scaling Newton Method.

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