

Newton's Method Math 251

Name: _____

A method to approximate solutions

Newton's Method

If x_n is an approximation of a solution of $f(x) = 0$ and if $f'(x_n) \neq 0$, the next approximation is given by

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)} .$$

Use two or more iterations of Newton's Method to determine an approximation to the solution to each equation

1. $\frac{1}{2}x^3 + x^2 + 1 = 0$

2. $e^{2-0.5x} = 2$

Use two or more iterations of Newton's Method to determine an approximate solution that lies in the given interval.

3. to $\cos x = x$ on the interval $[0, 2]$