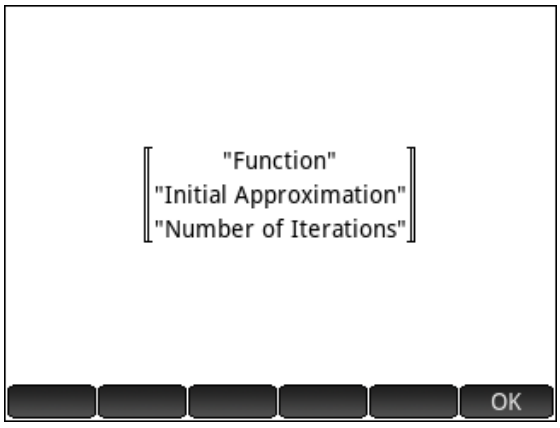
nwtnmod v1.1

The program nwtnmod finds the root of an equation using the Modified Newton-Raphson Method:

$$X_{i+1} = X_i - \frac{f(X_i) \times f'(X_i)}{[f(X_i)]^2 - f(X_i) \times f''(X_i)}$$

The program requires only one argument: a matrix of three rows and one column. The first element of the matrix is the function, the second element is the initial approximation, and the third element is the number of iterations.



- **NEW (v1.1)**: An error was corrected: now, the program works in approximate mode so it doesn't crash if we use any complicated function.

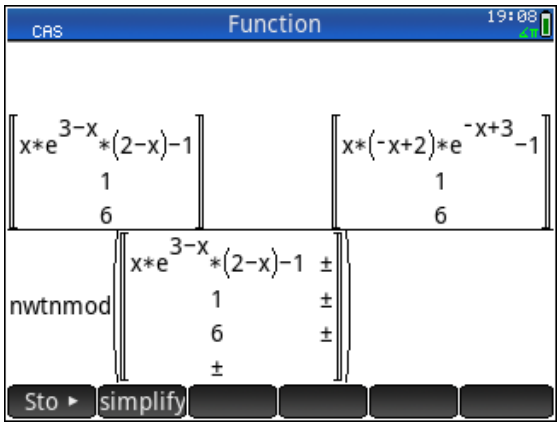
Example:

Use Modified's Newton Method to find a solution to the problem:

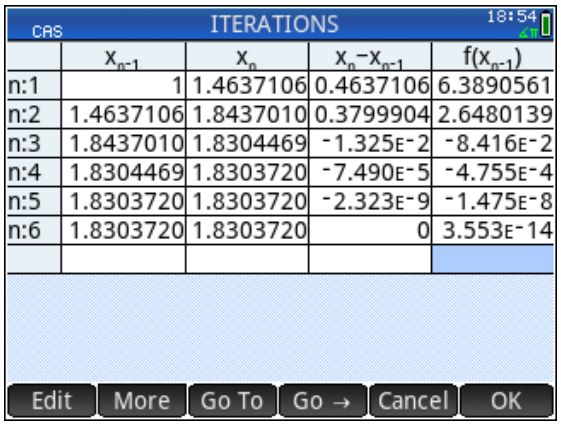
$$xe^{3-x}(2-x) - 1 = 0$$

Solution:

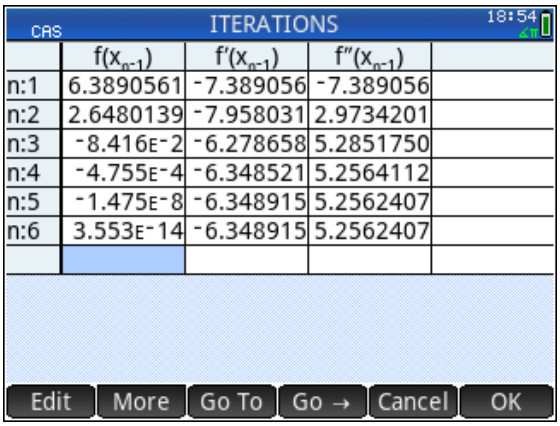
- Identify the elements of the matrix:
  - Function: $xe^{3-x}(2-x) - 1$
  - Initial Approximation: 1
  - Number of Iterations: 6
- Type the matrix, and run the program in the CAS window:



- Results:
  - Table of iterations.

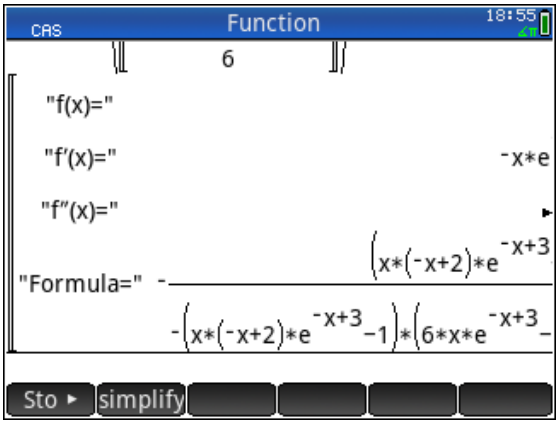


	x_{n-1}	x_n	$x_n - x_{n-1}$	$f(x_{n-1})$
n:1	1	1.4637106	0.4637106	6.3890561
n:2	1.4637106	1.8437010	0.3799904	2.6480139
n:3	1.8437010	1.8304469	-1.325E-2	-8.416E-2
n:4	1.8304469	1.8303720	-7.490E-5	-4.755E-4
n:5	1.8303720	1.8303720	-2.323E-9	-1.475E-8
n:6	1.8303720	1.8303720	0	3.553E-14



	$f(x_{n-1})$	$f'(x_{n-1})$	$f''(x_{n-1})$
n:1	6.3890561	-7.389056	-7.389056
n:2	2.6480139	-7.958031	2.9734201
n:3	-8.416E-2	-6.278658	5.2851750
n:4	-4.755E-4	-6.348521	5.2564112
n:5	-1.475E-8	-6.348915	5.2562407
n:6	3.553E-14	-6.348915	5.2562407

- Matrix of functions: $f(X_i)$, $f'(X_i)$, $f''(X_i)$, formula of iteration.



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