PROBLEM A.1: NEWTON'S METHOD

ROSIE KEY

1. Equation 1:

$\frac{1}{100}[x^4 + (e - 2 - \sqrt{2})x^3 + (2\sqrt{2} - \sqrt{2}e - 3 - 2e)x^2 + (2\sqrt{2}e + 3\sqrt{2} - 3e)x + 3\sqrt{2}e]$

Using the program, the solutions for the equation as $x \to \infty$ approximates to $x = 3.0000000000000004$.

2. Equation 2: $\tan x - x - 2$

Using the program, four initial values for x were plugged in and returned the following solutions. For the initial value $x_0 = \frac{\pi}{3}$, the solution is $x = 1.0471975511965976$. For the initial value $x_0 = \frac{-\pi}{2}$, the solution is $x \approx \frac{-\pi}{2}$. For the initial value $x_0 = 1.11$, the solution is $x = 1.2743927$. For the initial value $x_0 = \frac{-3\pi}{2}$, the solution is $x \approx \frac{-3\pi}{2}$.

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