Math 411 Hwk 1

Problem 1 (40 points).

(a). *Write a robust and general Matlab function that computes roots via Newton's Method. Add the logic necessary so that the function will exit gracefully if it is not convergent.*

(b). *Write a robust and general Matlab function that computes roots via Broyden's Method. Add the logic necessary so that the function will exit gracefully if it is not convergent.*

Problem 2 (60 points). *The nonlinear system*

$$\begin{aligned} x(x-1)+4y &= 12 \\ (x-2)^2+(2y-3)^2 &= 25. \end{aligned}$$

has two solutions.

(a). *Approximate the solutions graphically.*

(b). *Use your approxmate guess in* (a) *as an initial guess for Newton's Method. Calculate the solutions to within* 10^{-5}.

(c). *Use your approxmate guess in* (a) *as an initial guess for Broyden's method. Calculate the solutions to within* 10^{-5}.