ELEC 2120-005
Lab 1 – MATLAB Symbolic Math Toolbox
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Introduction
The purpose of this lab was to introduce the use of symbolic variables in MATLAB. Then, how these symbolic variables can be used to solve systems of equations both graphically and the vpasolve command in MATLAB.

Procedure
4.1 – Solutions to second order equation: x^2 -7x + 6 = 0

- x = 1
- x = 6

4.2 – Solutions to system of equations: 2x + y - 2z = 3, 2x - y - 2z = 0, x + y + 3z = 12

- x = 51/16
- y = 3/2
- z = 39/16

4.3 – Centers of circles

- C1 = (5, -4.9161)
- C2 = (5, 6.9161)

4.4 – Solutions to equation: cos(x) = x^2 – 6

- x = -2.308
- x = 2.308

4.5 – Solutions to equation: cos(x) = sin(x)

- The equation cos(x) = sin(x) has infinitely many solutions. The first three solutions, starting at x=0, are listed below
- x1 = 0.785
- x2 = 3.927
- x3 = 7.069

4.6 – Solving system f(x) = g(x)

- system used: $\sqrt{x+3}$ = x^2 – 1
- x1 = -1.493
- x2 = 1.785
- plot shown below

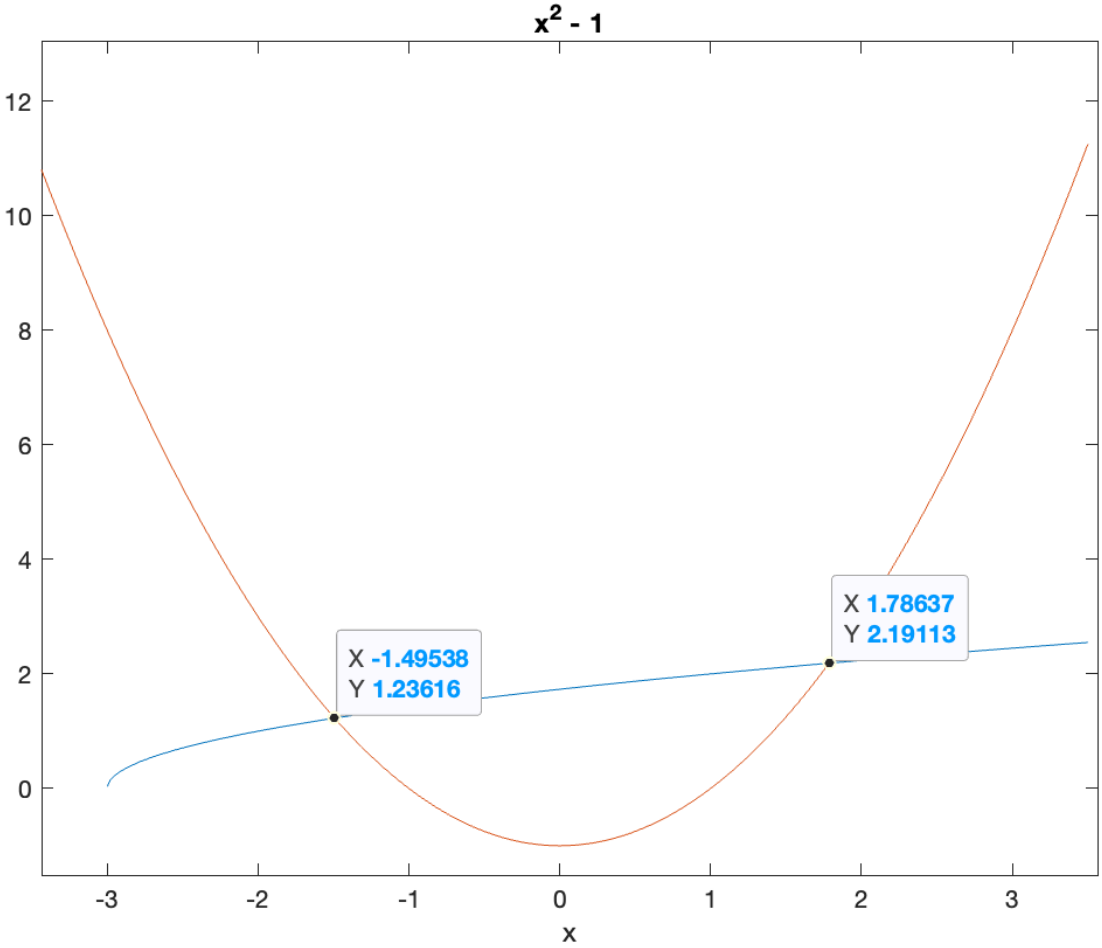

Figure 1. MATLAB plot of f(x) = g(x) system

Conclusions

I enjoyed learning how to use MATLAB as an equation solving tool because it's a very useful skill, as well as gaining further practice plotting functions. The only issue encountered was having to download the symbolic math toolbox so the symbolic variables could be used in MATLAB. There are no major changes I would make to the procedure.