Lab Objectives:
To find the eigenvalues for a 3x3 matrix.

Description of Lab:
Your program will ask the user to enter a 3x3 real-valued matrix. It will then compute the eigenvalues (real and complex) for that matrix.

Requirements: The program should…
1. Ask the user to enter a real valued 3x3 matrix.
2. Find the determinant of the matrix $A - \lambda I$.
3. From (2), find the coefficients, $a_i, i = 0,1,2,3$ of the characteristic equation $a_3\lambda^3 + a_2\lambda^2 + a_1\lambda + a_0$
4. Find the solutions (real and/or complex) for $a_3\lambda^3 + a_2\lambda^2 + a_1\lambda + a_0 = 0$.
5. Output the results

What to Turn In:
1. A printout of your original code
2. A printout of the results for the following sample data inputs:
   a. $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
   b. $A = \begin{bmatrix} 1 & 3 & 2 \\ 4 & 1 & 0 \\ 1 & 2 & 1 \end{bmatrix}$
   c. $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
   d. $A = \begin{bmatrix} 5 & -5 & -5 \\ -1 & 4 & 2 \\ 3 & -5 & -3 \end{bmatrix}$
   e. $A = \begin{bmatrix} 0 & -4 & -1 \\ 0 & 2 & 3 \\ 5 & 1 & 3 \end{bmatrix}$
3. Please be sure to label your pages at the top
   (i.e. “Original Code page 1 of 2” and “Run ‘a’ page 1 of 1”, etc).
4. Include a cover sheet, with “Programming Assignment 7”, your name, and date.