MECH 6300 - Homework 5

```
% Problem 3
charEq = [1 6   13  2   4   1]
poles3 = roots(charEq)


% Problem 4
A = [-3 1   0
    0   -2   0
    0   0   0];
B = [1
    2
    0];
C = [1  4   2];
D = 0;
sys = ss(A,B,C,D);
zpk4 = zpk(sys)


% Problem 5
A = [2  3   2
    3   1   0
    2   0   2];
eig_5a = eig(A)
syms s
delta_s = det(s*eye(3) - A)

A = [0  0   1
    0   0   0
    1   0   2];
Eig_5b = eig(A)


charEq =

     1     6    13     2     4     1


poles3 =

  -2.9902 + 1.9135i
  -2.9902 - 1.9135i
   0.1096 + 0.5658i
   0.1096 - 0.5658i
  -0.2389 + 0.0000i


zpk4 =

  9 (s+3.111)
  -----------
```

```
  (s+3) (s+2)

Continuous-time zero/pole/gain model.


eig_5a =

   -2.0000
    1.6972
    5.3028


delta_s =

s^3 - 5*s^2 - 5*s + 18


Eig_5b =

   -0.4142
         0
    2.4142
```

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