MECH 6300-HW 3

1)

a)

$$A = \begin{bmatrix} \frac{7}{2} & \frac{21}{2} & 14 \\ -\frac{1}{2} & -\frac{3}{2} & -2 \\ -\frac{1}{2} & -\frac{3}{2} & -2 \end{bmatrix}$$

$$\Delta(s) = |sI - A| = \begin{vmatrix} s - \frac{7}{2} & -\frac{21}{2} & -14 \\ \frac{1}{2} & s + \frac{3}{2} & 2 \\ \frac{1}{2} & \frac{3}{2} & s + 2 \end{vmatrix}$$

$$\boxed{\Delta(s) = s^3}$$

$$\boxed{\lambda_1 = 0, \; m_1 = 3}$$

$$J = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix}$$

$$\rho(A) = 2$$

$$\gamma(A) = 1$$