

NA hw8 Problem2 Written Response

$$x^4 + 0.4x^3 - 0.5x^2 + 1.2x - 1.5 = 0$$

Per Vieta,

$$\begin{cases} x_1 + x_2 + x_3 + x_4 = -0.4 \\ x_1(x_2 + x_3 + x_4) + x_2(x_3 + x_4) + x_3x_4 = -0.5 \\ x_1x_2(x_3 + x_4) + x_1x_3x_4 + x_2x_3x_4 = -1.2 \\ x_1x_2x_3x_4 = -1.5 \end{cases}$$

J =

$$\begin{bmatrix} 1 & 1 & & \\ x_2 + x_3 + x_4 & x_1(x_3 + x_4) & & \\ x_2(x_3 + x_4) + x_3x_4 & x_1(x_3 + x_4) + x_3x_4 & \cdot & \cdot \\ x_2x_3x_4 & x_1x_3x_4 & & \end{bmatrix}$$

$$\begin{bmatrix} & 1 & & 1 \\ & x_1 + x_2 + x_4 & & x_1 + x_2 + x_3 \\ \cdot & \cdot & \cdot & x_1x_2 + x_2x_3 + x_1x_3 \\ & x_1 + x_2x_4 + x_2x_3 & & x_1x_2x_3 \\ & x_1x_2x_4 & & \end{bmatrix}$$