

7.2

$$UX = \begin{bmatrix} 4 & 1 & 0 & 0 \\ 0 & 15/4 & 1 & 0 \\ 0 & 0 & 56/15 & 1 \\ 0 & 0 & 204/56 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 2 \\ -3.5 \\ 3.933 \\ -3.053 \end{bmatrix}$$

$$4x_1 + x_2 = 2$$

$$\frac{15}{4}x_2 + x_3 = -3.5$$

$$\frac{56}{15}x_3 + x_4 = 3.933$$

$$\frac{204}{56}x_4 = -3.053$$

$$x_4 = 6.785$$

$$x_3 = \frac{3.933 - 6.785}{56/15} = -0.7639$$

$$x_2 = \frac{-3.5 + 0.7639}{15/4} = -0.7296$$

$$x_1 = \frac{2 + 0.7296}{4} = 0.6824$$

$$X = \begin{bmatrix} 0.6824 \\ -0.7296 \\ -0.7639 \\ 6.785 \end{bmatrix}$$