

Example III.20 (Feldman's notes)

$$A = \begin{bmatrix} 2 & -3 & 2 & 5 \\ 1 & -1 & 1 & 2 \\ 3 & 2 & 2 & 1 \\ 1 & 1 & -3 & 1 \end{bmatrix}$$

$$\left[\begin{array}{cccc|cccc} 2 & -3 & 2 & 5 & 1 & 0 & 0 & 0 \\ 1 & -1 & 1 & 2 & 0 & 1 & 0 & 0 \\ 3 & 2 & 2 & 1 & 0 & 0 & 1 & 0 \\ 1 & 1 & -3 & 1 & 0 & 0 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} (2) - 0.5(1) \\ (3) - 1.5(1) \\ (4) - 0.5(1) \end{array} \left[\begin{array}{cccc|cccc} 2 & -3 & 2 & 5 & 1 & 0 & 0 & 0 \\ 0 & 0.5 & 0 & -0.5 & -0.5 & 1 & 0 & 0 \\ 0 & 6.5 & -1 & -6.5 & -1.5 & 0 & 1 & 0 \\ 0 & 2.5 & -4 & -1.5 & -0.5 & 0 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} (3) - 13(2) \\ (4) - 5(2) \end{array} \left[\begin{array}{cccc|cccc} 2 & -3 & 2 & 5 & 1 & 0 & 0 & 0 \\ 0 & 0.5 & 0 & -0.5 & -0.5 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 & 5 & -13 & 1 & 0 \\ 0 & 0 & -4 & 1 & 2 & -5 & 0 & 1 \end{array} \right]$$

$$(4) - 4(3) \left[\begin{array}{cccc|cccc} 2 & -3 & 2 & 5 & 1 & 0 & 0 & 0 \\ 0 & 0.5 & 0 & -0.5 & -0.5 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 & 5 & -13 & 1 & 0 \\ 0 & 0 & 0 & 1 & -18 & 47 & -4 & 1 \end{array} \right]$$

$$\begin{array}{l} 2(2) + (4) \\ -(3) \end{array} \left[\begin{array}{cccc|cccc} 2 & -3 & 2 & 5 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & -19 & 49 & -4 & 1 \\ 0 & 0 & 1 & 0 & -5 & 13 & -1 & 0 \\ 0 & 0 & 0 & 1 & -18 & 47 & -4 & 1 \end{array} \right]$$

$$0.5[(1) + 3(2) - 2(3) - 5(4)] \left[\begin{array}{cccc|cccc} 1 & 0 & 0 & 0 & 22 & -57 & 5 & -1 \\ 0 & 1 & 0 & 0 & -19 & 49 & -4 & 1 \\ 0 & 0 & 1 & 0 & -5 & 13 & -1 & 0 \\ 0 & 0 & 0 & 1 & -18 & 47 & -4 & 1 \end{array} \right]$$

$$A^{-1} = \begin{bmatrix} 22 & -57 & 5 & -1 \\ -19 & 49 & -4 & 1 \\ -5 & 13 & -1 & 0 \\ -18 & 47 & -4 & 1 \end{bmatrix}$$