

SLE HW Exercises2 (Not for turn in.)

1. Write a matlab script that will find the inner product of two vectors.
2. Write a matlab script that will swap the 'name' of two vectors.
3. Solve the following matrices by (a) determining the inverse and (b) doing row operations. If there is no inverse indicate so.

$$(a) \quad A = \begin{pmatrix} 4 & -3 \\ -1 & 2 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \quad (b) \quad \begin{cases} 2x - 4y = 10 \\ x + 2y = -3 \end{cases} \quad (c) \quad \begin{cases} 2u_1 + 3u_2 - u_3 = 4 \\ 3u_1 - 2u_2 + u_3 = 1 \\ u_1 + u_2 - 2u_3 = 5 \end{cases}$$

$$(c) \quad A = \begin{pmatrix} 1 & 2 & 3 \\ 7 & 8 & 9 \\ 4 & 5 & 6 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} a \\ b \\ c \end{pmatrix} \quad (d) \quad (e) \quad A = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \\ 13 & 14 & 15 & 16 \end{pmatrix} \quad \bar{b} = \begin{pmatrix} 1 \\ 0 \\ 0 \\ -1 \end{pmatrix}$$

$$(f) \quad \begin{cases} 2u_1 + 3u_2 - u_3 + u_4 = 1 \\ 3u_1 - 2u_2 + u_3 - u_4 = 8 \\ u_1 + u_2 - 2u_3 + 2u_4 = 1 \\ u_2 + u_4 = 0 \end{cases}$$

5. Determine the Vandermonde polynomial passing through the points  $S = \{(-1, 9), (0, 4), (1, 3), (2, 6)\}$
6. Write a matlab script that will solve any 2 x 2 SLE. Have the matlab script indicate if there is no solution. Do an operation count.