

SCI 113 Spring 2008

Answers exercises LN chapter 7, and book Chapter 7

- (1) LN 7.31 (1) $A = \begin{pmatrix} -6 & 3 & 9 \\ 12 & 0 & -3 \end{pmatrix}$, (2) $A + B = \begin{pmatrix} 2 & 2 & 1 \\ 9 & -1 & 2 \end{pmatrix}$,
 (3) $B + C$ is not defined, (4) $C - D = \begin{pmatrix} 6 & -3 \\ -3 & 1 \\ -2 & 5 \end{pmatrix}$
 (5) $4A - 2B = \begin{pmatrix} 16 & 2 & 16 \\ 6 & 2 & -10 \end{pmatrix}$, (6) AB is not defined, (7) $(CD)^T$ is not
 defined, (8) A^2 is not defined, (9) $(AC)^2 = \begin{pmatrix} 323 & -266 \\ -209 & 190 \end{pmatrix}$,
 (10) $ADB = \begin{pmatrix} -8 & 16 & -40 \\ -5 & -26 & 63 \end{pmatrix}$, (11) $(A^T)A = \begin{pmatrix} 20 & -2 & -10 \\ -2 & 1 & 3 \\ -10 & 3 & 11 \end{pmatrix}$
 (12) $BC = \begin{pmatrix} 2 & -1 \\ 0 & 6 \\ -3 & 2 \end{pmatrix}$, and $CB = \begin{pmatrix} 3 & 3 & -7 \\ 30 & -6 & 18 \\ -2 & -5 & 12 \end{pmatrix}$.
 (2) LN 7.32 (1) $A^2 = \begin{pmatrix} 4 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$, (2) $A^7 = \begin{pmatrix} 128 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$.
 (3) LN 7.33 (1) $A^2 = \begin{pmatrix} -2 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & -2 \end{pmatrix}$, (2) $A^7 = \begin{pmatrix} 0 & 0 & 8 \\ 0 & 128 & 0 \\ -16 & 0 & 0 \end{pmatrix}$.
 (4) LN 7.34 $xy = -15$, $yx = \begin{pmatrix} -8 & 12 & -4 \\ 2 & -3 & 1 \\ -6 & 9 & -3 \end{pmatrix}$.
 (5) LN 7.36 (1) $\begin{pmatrix} \sqrt{2} & \sqrt{2} \\ -\sqrt{2} & \sqrt{2} \end{pmatrix}$, (2) $\begin{pmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix}$, (3) $\begin{pmatrix} \frac{-\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{pmatrix}$.
 (6) LN 7.38 $\begin{pmatrix} \frac{-3}{5} & \frac{4}{5} \\ \frac{4}{5} & \frac{3}{5} \\ \frac{3}{5} & -\frac{4}{5} \end{pmatrix}$.
 (7) Book 7.2 $x = -2$ and $y = 1$.
 (8) Book 7.10

$$\begin{cases} x - y + 2z = 2 \\ 3x + z = 0 \\ -x + 2y - 3z = -1. \end{cases}$$