

1. (8 pts) Compute the products of these matrices (if defined).

$$\begin{bmatrix} a & b & c \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = [ax + by + cz]$$

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} x & y \\ z & w \end{bmatrix} = \begin{bmatrix} ax + bz & ay + bw \\ cx + dz & cy + dw \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \\ c \end{bmatrix} \begin{bmatrix} x & y & z \end{bmatrix} = \begin{bmatrix} ax & ay & az \\ bx & by & bz \\ cx & cy & cz \end{bmatrix}$$

2. (6 pts; p 7 #1) Solve the given linear system by the method of elimination

$$\begin{array}{rcl} x_1 & +2x_2 & = 8 \\ 3x_1 & -4x_2 & = 4 \end{array}$$

$$\begin{array}{rcl} x_1 & +2x_2 & = 8 \\ -10x_2 & = & -20 \end{array} \qquad \begin{array}{rcl} x_1 & +2x_2 & = 8 \\ & x_2 & = 2 \end{array} \qquad \begin{array}{rcl} x_1 & & = 4 \\ & x_2 & = 2 \end{array}$$

3. (6 pts; p 7 #15) Given the linear system

$$\begin{array}{rcl} 2x_1 & -x_2 & = 5 \\ 4x_1 & -2x_2 & = t \end{array}$$

- (a) determine all values of t for which the system is consistent;
 (b) determine all values of t for which the system is inconsistent.

$$\begin{array}{rcl} 2x_1 & -x_2 & = 5 \\ & 0 & = -10 + t \end{array}$$

The system is consistent if and only if $t = 10$.