

Name _____

Date _____

Advanced Algebra

Unit 6 Linear Programming- Matrices Assignment #1

Find each matrix product, if it is defined

$$1) \begin{bmatrix} 4 & 3 \\ -1 & -2 \end{bmatrix} * \begin{bmatrix} 5 \\ 1 \end{bmatrix}$$

$$2) \begin{bmatrix} -6 \\ 2 \end{bmatrix} * \begin{bmatrix} -1 & 12 \\ 0 & -4 \end{bmatrix}$$

$$3) \begin{bmatrix} 1 & -5 \\ 2 & 3 \end{bmatrix} * \begin{bmatrix} 4 & -4 \\ 0 & 1 \end{bmatrix}$$

$$4) \begin{bmatrix} -2 & 3 \\ 4 & 2 \end{bmatrix} * \begin{bmatrix} 0 & 3 \\ -6 & 5 \end{bmatrix}$$

$$5) \begin{bmatrix} 8 & -10 \\ 0 & 3 \\ -6 & 4 \end{bmatrix} * \begin{bmatrix} -2 \\ -9 \\ 1 \end{bmatrix}$$

$$6) \begin{bmatrix} 7 & 1 & -3 & 4 \end{bmatrix} * \begin{bmatrix} 4 & 1 \\ -3 & 8 \\ 9 & 5 \\ -2 & 6 \end{bmatrix}$$

$$7) \begin{bmatrix} 9 & -4 & 4 \\ 2 & -1 & -6 \end{bmatrix} * \begin{bmatrix} 2 & -1 & 0 \\ 0 & 1 & -3 \\ 3 & 5 & 2 \end{bmatrix}$$

$$8) \begin{bmatrix} 0 \\ -2 \end{bmatrix} * \begin{bmatrix} 4 \\ 1 \end{bmatrix}$$

$$9) \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} * \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

$$10) \begin{bmatrix} 9 & 4 \\ 3 & 1 \\ 2 & 8 \\ 1 & 5 \end{bmatrix} * \begin{bmatrix} 4 & 2 & 1 \\ 3 & 0 & 2 \end{bmatrix}$$

Applications of Matrices

Business: Matrix S gives the number of three types of cars sold in March by two car dealers, and matrix P gives the profit for each type of car sold.

		dealer				
		1	2			
				<i>compact</i>	<i>mid</i>	<i>full</i>
<i>Compact</i>	$\begin{bmatrix} 18 & 15 \\ 24 & 17 \\ 16 & 20 \end{bmatrix} = S$	18	15			
<i>Mid – Size</i>		24	17			
<i>full Size</i>		16	20			
				Profit [\$400 \$650 \$900] =P		

Which matrix is defined, SP or PS? **Find this matrix and interpret its elements.**

Education:

Suppose a teacher calculates your test average for the term by using a formula that counts or weights each of your five tests a certain percentage of your grade, as shown in Matrix W below.

Test# 1 2 3 3 5
 Weight [15% 15% 25% 15% 30%]

Scores: $\begin{bmatrix} \text{Test 1} \\ \text{Test 2} \\ \text{Test 3} \\ \text{Test 4} \\ \text{Test 5} \end{bmatrix} \begin{bmatrix} 82 & 92 & 74 \\ 85 & 88 & 68 \\ 78 & 95 & 73 \\ 75 & 85 & 82 \\ 84 & 94 & 81 \end{bmatrix}$ These are the test scores for students A, B, C

Arrange the matrices so that you can give each student a final score for the semester.