Algebra 2 – Unit 12

Name: _____ Date:_____ Period: _____ **ID: 2**

12 Corrective Assignment – Matrices (part 1)

*NO **GRAPHING** CALCULATOR*

Solve for x and y.

1) $\begin{bmatrix} -4 & 4 \\ 7 & \boldsymbol{y} \end{bmatrix} - 2\begin{bmatrix} -8 & 3 \\ \boldsymbol{x} & -2 \end{bmatrix} = \begin{bmatrix} 12 & -2 \\ -3 & 5 \end{bmatrix}$

2) $3\begin{bmatrix} -1 & 9 \\ 4 & 0 \end{bmatrix} + \boldsymbol{y}\begin{bmatrix} 1 & -2 \\ 2 & \boldsymbol{x} \end{bmatrix} = \begin{bmatrix} 1 & 19 \\ 20 & -12 \end{bmatrix}$

The dimensions of Matrix *A* and Matrix *B* are listed. What are the dimensions of the product of *AB*? If it is not possible, then write "undefined."

3) Matrix ***A***: 5 x 3
Matrix ***B***: 3 x 4

Matrix ***AB***: _____ x _____

4) Matrix ***A***: 1 x 2
Matrix ***B***: 2 x 1

Matrix ***AB***: _____ x _____

Find the product of the two matrices. SHOW YOUR WORK and box your final answer.

5) $\begin{bmatrix} 5 & -5 \end{bmatrix}\begin{bmatrix} 1 & 6 \\ 4 & 1 \end{bmatrix}$

For 6-7, solve for the variables x and y. SHOW YOUR WORK!

6) $\begin{bmatrix} -6 & -3 \\ \boldsymbol{x} & 5 \end{bmatrix} \cdot \begin{bmatrix} \boldsymbol{y} & -4 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} -15 & 33 \\ 25 & 5 \end{bmatrix}$

7) $\begin{bmatrix} 0 & -1 \\ \boldsymbol{y} & -5 \end{bmatrix} \cdot \begin{bmatrix} -6 & -4 \\ \boldsymbol{x} & -2 \end{bmatrix} = \begin{bmatrix} -5 & 2 \\ -43 & -2 \end{bmatrix}$

Algebra 2 – Unit 12

Name: _____ Date:_____ Period: _____ **ID: 2**

12 Corrective Assignment – Matrices (part 2)

GRAPHING CALCULATOR ***ALLOWED***

Simplify. Write "undefined" for expressions that are undefined.

8) $\begin{bmatrix}-4\\-2\\2\end{bmatrix}-\begin{bmatrix}-6\\1\\6\end{bmatrix}$

9) $\begin{bmatrix}-6\\-1\\-4\\0\end{bmatrix}+\begin{bmatrix}-4\\0\\-5\\2\end{bmatrix}+\begin{bmatrix}1\\-2\\-5\\-4\end{bmatrix}$

10) $5\begin{bmatrix}-2\\2\\-2\end{bmatrix}+\begin{bmatrix}0\\6\\-6\end{bmatrix}$

11) Solve: $[-7 \quad -26 \quad 13 \quad 35]=-3Z+[-10 \quad -2 \quad 7 \quad 11]$

12) Solve: $X-\begin{bmatrix}-6\\2\end{bmatrix}=\begin{bmatrix}3\\-5\end{bmatrix}$

13) Find the inverse of the 2x2 matrix. Show your work.

$\begin{bmatrix}3 & 7\\0 & -3\end{bmatrix}$

14) Solve the matrix equation with a graphing calculator.

$\begin{bmatrix}-8 & 4\\12 & 6\end{bmatrix}=\begin{bmatrix}-4 & 4\\4 & -2\end{bmatrix}X$

15) Solve the system using a matrix equation. Set up the matrices in the space below, then use a calculator to solve it.

$$\begin{aligned}4r+3t&=10\\ s-4t&=-4\\ r&=-5s-2t+25\end{aligned}$$

16) Mr. Brust asked students in his Algebra I class and his Precalculus class how many students went to a movie, went to a concert, or went shopping last weekend. He recorded the results in two matrices. Find the total for the two classes.

	M	C	S
Males	4	0	2
Females	11	1	1

	M	C	S
Males	0	2	3
Females	6	2	15

17) A company stocks items A, B, and C at each of its two stores. Use matrix multiplication to determine the value of the inventory at each store if item A costs \$10, item B costs \$11, and item C costs \$7. Write your answer in a matrix with appropriate labels for the rows and columns.

	Inventory		
	Item A	Item B	Item C
Store 1	21	35	16
Store 2	130	5	20

For 18 and 19, set up a system of equations involving three variables, then use a matrix equation to solve for the variables.

18) The first number is 6 more than the second number. The difference between the third and first number is the opposite of the second number. The sum of the second and third numbers is 4. What are the three numbers?

19) The measure of the largest angle of a triangle is 90 degrees more than the sum of the measures of the other two angles. The smallest angle is half of the second smallest angle. Find the measures of the three angles of the triangle.

Answers to Unit 12 Corrective Assignment

1) $x = 5,\ y = 1$

2) $x = -3,\ y = 4$

3) 5 x 4

4) 1 x 1

5) $[-15 \quad 25]$

6) $x = -5; y = 0$

7) $x = 5; y = 3$

8) $\begin{bmatrix} 2 \\ -3 \\ -4 \end{bmatrix}$

9) $\begin{bmatrix} -9 \\ -3 \\ -14 \\ -2 \end{bmatrix}$

10) $\begin{bmatrix} -10 \\ 16 \\ -16 \end{bmatrix}$

11) $Z = [-1 \quad 8 \quad -2 \quad -8]$

12) $X = \begin{bmatrix} -3 \\ -3 \end{bmatrix}$

13) $\begin{bmatrix} \frac{1}{3} & \frac{7}{9} \\ 0 & -\frac{1}{3} \end{bmatrix}$

14) $\begin{bmatrix} 4 & 4 \\ 2 & 5 \end{bmatrix}$

15) $\begin{bmatrix} r \\ s \\ t \end{bmatrix} = \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$

16)

	M	C	S
Males	4	2	5
Females	17	3	16

17)

$$\begin{bmatrix} 21 & 35 & 16 \\ 130 & 5 & 20 \end{bmatrix} \begin{bmatrix} 10 \\ 11 \\ 7 \end{bmatrix} = \begin{matrix} \text{Store 1} \\ \text{Store 2} \end{matrix} \begin{matrix} \text{Inventory Value (\$)} \\ \begin{bmatrix} 707 \\ 1495 \end{bmatrix} \end{matrix}$$

18)

$$\begin{aligned} x &= 6 + y \\ z - x &= -y \\ y + z &= 4 \end{aligned}$$

First number: **4**
Second number: $\mathbf{-2}$
Third number: **6**

19)

$$\begin{aligned} z &= 90 + x + y \\ x &= \frac{1}{2}y \\ x + y + z &= 180 \end{aligned}$$

***x*: 15 degrees**
***y*: 30 degrees**
***z*: 135 degrees**