

Name: \_\_\_\_\_  
PC: Review sheet for Exam 2 Quarter 3

Date: \_\_\_\_\_  
Ms. Loughran

- 1) Using Matrices, find the area of the triangle with vertices  $(2/3, 4)$ ,  $(3, -6)$ , and  $(1/2, -3)$

- 2) Which value of  $x$  for the equation below is true?

$$\begin{bmatrix} 3x \\ y \end{bmatrix} = \begin{bmatrix} 10 + 2y \\ 5 - x \end{bmatrix}$$

- 3) Find the sum of the given matrices:

$$\begin{bmatrix} 3 & -2 \\ 5 & 6 \end{bmatrix} + \begin{bmatrix} 1 & -5 \\ 8 & 4 \end{bmatrix}$$

- 4) Find the difference of the given matrices:

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

- 5) Find the scalar product of the given matrix and coefficient:

$$-3 \begin{bmatrix} 1 & -3 & 6 \\ 9 & -1 & 4 \end{bmatrix}$$

- 6) Find the product of the given matrices:

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

7) Find the inverse of  $\begin{bmatrix} 5 & -6 \\ -3 & 4 \end{bmatrix}$ .

8) Simplify:  $\begin{bmatrix} 2 & -1 \\ 4 & 5 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ -3 & 1 \end{bmatrix} + \begin{bmatrix} 2 & -1 \\ 4 & 5 \end{bmatrix} \begin{bmatrix} -3 & 4 \\ 5 & -1 \end{bmatrix}$

9) Evaluate:  $\begin{vmatrix} 1 & 8 & -2 \\ 3 & -1 & 4 \\ 2 & -3 & -1 \end{vmatrix}$

10) For what value of  $w$  is the following statement true?

$$\begin{vmatrix} 5 & -2 \\ 3 & w \end{vmatrix} = w + 14$$

Questions 11 through 13 refer to the following:

Use Cramer's Rule to solve the given linear system of equations:

11)  $x - 4y = 22$   
 $2x - 7y = 39$

12)  $2x - 4y = 7$   
 $-x + y = 1$

13)  $x + 3y - z = 8$   
 $2x - y + 2z = 0$   
 $-3x + y - 3z = -2$

14) Write the system of equations represented by the matrix equation below:

$$\begin{bmatrix} 3 & -2 & 5 \\ 1 & 1 & -4 \\ -2 & 2 & 7 \end{bmatrix} \cdot \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \\ -5 \end{bmatrix}$$

15) Solve the system of linear equations by using an inverse matrix:

$$6x - 5y = 3$$
$$3x - 2y = 3$$

16) Are the points  $(3, 1/2)$ ,  $(-2, 2)$ , and  $(5, -3)$  collinear?

17) Using Matrices, find an equation of the line that passes through  $(2, -2)$  and  $(1/2, 3)$

18) What is the inverse of the following matrix?

$$\begin{bmatrix} i & m \\ g & o \end{bmatrix}$$

19) What is the determinant of the following matrix?

$$\begin{bmatrix} b & e & t \\ c & a & r \\ i & n & g \end{bmatrix}$$

Questions 20 and 21 refer to the following:

Using the matrices below, find the matrix equal to the given expression:

$$S = \begin{bmatrix} 4 & 6 \\ 1 & 2 \end{bmatrix} \quad T = \begin{bmatrix} 0 & -1 \\ 1 & 2 \end{bmatrix} \quad U = \begin{bmatrix} 1 & 4 \\ 6 & -3 \\ 2 & -1 \\ 5 & 0 \end{bmatrix} \quad V = [9 \ 6 \ 4 \ -1]$$

20)  $S - T$

21)  $T + U$

22)  $UV$

Given:

$$A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & k \end{bmatrix} \text{ and } B = \begin{bmatrix} m & o & p \\ q & r & s \\ t & y & z \end{bmatrix}$$

Find:

23.  $A + B$

24.  $A - B$

25.  $AB$

26.  $2B$

27.  $\det(A)$

28.  $|B|$