Honors Discrete Matrix Review Worksheet

Name_____ Name_____

For questions 1 - 4 refer to the following matrices.

$$A = \begin{bmatrix} 3 & 1 \\ 2 & 0 \\ -1 & 4 \end{bmatrix} \qquad B = \begin{bmatrix} -2 & 1 & 6 & 8 \\ 4 & 0 & -3 & 2 \end{bmatrix}$$

1. What are the dimensions of A?

2. What are the dimensions of B?

3. What is A_{22} ?

4. What is B_{21} ?

For questions 5 - 14, refer to the following matrices.

$$A = \begin{bmatrix} 3 & 1 \\ 2 & 0 \\ -1 & 4 \end{bmatrix} \quad B = \begin{bmatrix} -2 & 1 & 6 & 8 \\ 4 & 0 & -3 & 2 \end{bmatrix} \quad C = \begin{bmatrix} -1 \\ 2 \\ 0 \\ -1 \end{bmatrix} \quad D = \begin{bmatrix} 3 & 2 \\ -1 & 4 \end{bmatrix} \quad E = \begin{bmatrix} 1 & 4 & -2 \\ 2 & 1 & 6 \\ 0 & 3 & 0 \end{bmatrix}$$

$$F = \begin{bmatrix} 1 & 8 \\ 0 & -2 \end{bmatrix} \quad G = \begin{bmatrix} 2 & 1 \\ 3 & -1 \\ 0 & -4 \end{bmatrix} \quad H = \begin{bmatrix} 0 & -1 & 1 \\ 2 & 0 & -3 \\ 0 & -4 & 0 \end{bmatrix}$$

Find the following.

5. 3A

6. ½ D

7. F - 2D

8. D + 3F

9. DB

10. EH

11. F^2

12. AF

13. |D|

14. |E|

For questions 15 - 20, refer to the following matrices.

$A = \begin{bmatrix} 3 & 1 \\ -4 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 0 \\ -1 & 3 \end{bmatrix}$ $C = \begin{bmatrix} 5 & 2 \\ 15 & 6 \end{bmatrix}$ $D = \begin{bmatrix} 2 & 1 \\ 3 & -1 \end{bmatrix}$

15. Find the inverse of A.

16. Find the inverse of B.

Find the missing matrix.

17. $EA = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

18. $AF = \begin{bmatrix} 11 & 2 \\ -17 & 2 \end{bmatrix}$

19. $GD = \begin{bmatrix} 1 & 3 \\ 9 & 2 \\ 2 & 1 \end{bmatrix}$

20. $BL = \begin{bmatrix} 2 \\ -13 \end{bmatrix}$

Solve Question 21 by using Cramer's Rule and 22 by Inverse Matrices.

21. $2x - 3y = 32$
$x + 4y = -20$

22. $2x + y - z = 15$
$4x - 3y + 7z = -11$
$x + y + z = 2$

For questions 23 - 24, solve each system of equations by using the inverse matrix method.

23. $x + 4y = -19$
$-3x + 2y = -13$

24. $x + 4y = -2$
$-3x + 2y = 6$

25. An advertisement from the back page of the Denton Chronicle:

$1300

Sofa and love seat

$1400

Sofa and two chairs

$1600

Sofa, love seat, one chair

How much does each piece of furniture cost individually?(Create a system and use Inverse Matrices to solve)

26. The table below shows the percent of comedies, drama, and action videos available at a video store. Assume that the store has a collection of 3,405 general videos to be rented, 1,070 children's videos to be rented, and 1,225 videos for sale. Write and solve a system of equations to find out how many comedies, dramas, and action movies are at the store.

Store Section	Comedy	Drama	Action
General rental	55%	65%	60%
Children's rental	25%	10%	20%
Videos for sale	20%	25%	20%