Acc PreCalc Name_____

Unit 1: Matrix Operations Quiz Review

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

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

2) $\begin{bmatrix} 3 & -2 & 2 \end{bmatrix} - \begin{bmatrix} -6 & 6 & 6 \end{bmatrix}$

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

4) $3\begin{bmatrix} 2y & x+y & -6x^2 & 6+x \\ 6y & -5+x & -3 & x^2 \end{bmatrix}$

Solve the equation.

5) $-3C - \begin{bmatrix} 6 & 9 & -4 & -1 \end{bmatrix} = \begin{bmatrix} -33 & 12 & 16 & -17 \end{bmatrix}$

6) $\begin{bmatrix} 1 & -8 & -2 \\ 0 & 9 & -3 \end{bmatrix} - 2X = \begin{bmatrix} -9 & -4 & -10 \\ 8 & 9 & 11 \end{bmatrix}$

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

7) $\begin{bmatrix} -3 & 2 \\ -2 & 2 \end{bmatrix} \cdot \begin{bmatrix} 3 & -5 \\ -5 & -1 \end{bmatrix}$

8) $\begin{bmatrix} -3 & 2 \end{bmatrix} \cdot \begin{bmatrix} 3 & -4 \\ 6 & -1 \end{bmatrix}$

9) $\begin{bmatrix} 1 & 5 \\ -1 & 4 \end{bmatrix} \cdot \begin{bmatrix} 5 \\ -2 \\ 5 \\ 2 \end{bmatrix}$

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

Evaluate each determinant.

11) $\begin{vmatrix} 2 & 1 \\ 4 & -5 \end{vmatrix}$

12) $\begin{vmatrix} 3 & -2 & -4 \\ 1 & -4 & 0 \\ 0 & 0 & -1 \end{vmatrix}$

Find the inverse of each matrix. (#13 By Hand, #14 Using Calculator)

13) $\begin{bmatrix} -2 & -4 \\ 7 & -5 \end{bmatrix}$

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

Use an inverse matrix to solve the linear system.

15) $22x - 17y = -289$
$8x + 17y = -221$

16) $2x + 17y = -289$
$x + y = -2$

For each matrix state if an inverse exists. Use the determinant in your explanation as to whether or not the inverse exists.

17) $\begin{bmatrix} -7 & 8 \\ 8 & -2 \end{bmatrix}$

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

19. "If the product of two square matrices is the identity matrix, then the two matrices are inverses of each other."

Use the statement above to determine whether or not A and B are inverses.

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

20. Use a calculator and inverse matrix to solve the linear system.

$$\begin{aligned} 6x-8y&=24 \\ -8x+8y-7z&=-25 \\ 2y+5z&=-5 \end{aligned}$$