Accel. Precalculus Name_____

Matrix Review

Date_____ Period____

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

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

2) $3\left(\begin{bmatrix} 3 & -3 \end{bmatrix} - \begin{bmatrix} 4 & 0 \end{bmatrix}\right)$

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

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

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

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

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

Evaluate the determinant of each matrix.

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

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

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

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

Find the inverse of each matrix.

12) $\begin{bmatrix} -5 & 8 \\ -7 & 0 \end{bmatrix}$

13) $\begin{bmatrix} 10 & -10 \\ -3 & -7 \end{bmatrix}$

14) $\begin{bmatrix} 12 & -10 \\ 4 & 9 \end{bmatrix}$

Use Cramer's Rule to solve each system.

15) $-2x - 2y = -4$
$4x - 6y = 1$

16) $2x - y = 4$
$4x - 2y = -20$

17) $x - z = 1$
$6x - 5y - z = -8$
$-6x - 5y - z = -4$

Solve each system of linear equations using any method.

18) $-x + y = 6$
$-x + 2y - 2z = 11$
$3x + 3y + 4z = 12$

19) $-x - 2y - 4z = 9$
$-2x + y + 4z = -10$
$5y + 2z = 12$

20) $5x - 2y = -22$
$-x - 5y = -1$

Answers to Matrix Review

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

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

3) $\begin{bmatrix} 8 \\ -12 \\ 0 \\ -5 \end{bmatrix}$

4) $\begin{bmatrix} -10 & 22 & 20 \\ -2 & 2 & -4 \end{bmatrix}$

5) $\begin{bmatrix} 20 & -5 & 0 \\ 26 & -4 & 6 \end{bmatrix}$

6) $\begin{bmatrix} -28 & -38 \\ 1 & -16 \\ 3 & -21 \end{bmatrix}$

7) $\begin{bmatrix} -16 & -8 \\ -20 & -4 \end{bmatrix}$

8) -12

9) 5

10) 24

11) 100

12) $\begin{bmatrix} 0 & -\frac{1}{7} \\ \frac{1}{8} & -\frac{5}{56} \end{bmatrix}$

13) $\begin{bmatrix} \frac{7}{100} & -\frac{1}{10} \\ -\frac{3}{100} & -\frac{1}{10} \end{bmatrix}$

14) $\begin{bmatrix} \frac{9}{148} & \frac{5}{74} \\ -\frac{1}{37} & \frac{3}{37} \end{bmatrix}$

15) $\left(\frac{13}{10}, \frac{7}{10}\right)$

16) No unique solution

17) $\left(-\frac{1}{3}, \frac{22}{15}, -\frac{4}{3}\right)$

18) $(-1, 5, 0)$

19) $(-1, 4, -4)$

20) $(-4, 1)$