# Practice Test Chapter 8

Date_____ Period____ Score_____

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

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

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

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

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

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

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

**Evaluate each determinant.**

7) $\begin{vmatrix} 9 & -5 \\ -3 & 8 \end{vmatrix}$

8) $\begin{vmatrix} -3 & 6 \\ -9 & 8 \end{vmatrix}$

9) $\begin{vmatrix} -3 & 5 & -3 \\ -1 & 1 & 4 \\ -4 & 0 & 3 \end{vmatrix}$

**Find the inverse of each matrix.**

10) $\begin{bmatrix} -2 & -10 \\ -1 & -5 \end{bmatrix}$

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

**Use Cramer's Rule to solve each system.**

12) $6x + 6y = 3$
$x + 5y = -12$

13) $-3x + y = 9$
$3y - 2z = -4$
$4x + 6y - 5z = -22$

**Solve each equation.**

14) $\begin{bmatrix} 29 \\ 13 \\ 10 \end{bmatrix} = 5C + \begin{bmatrix} 4 \\ -2 \\ -10 \end{bmatrix}$

15) $\begin{bmatrix} 3 & 2 \\ 1 & 0 \end{bmatrix} X + \begin{bmatrix} 5 & 11 \\ -5 & -6 \end{bmatrix} = \begin{bmatrix} -2 & 17 \\ 0 & -10 \end{bmatrix}$

**Write the augmented matrix for each system of linear equations.**

16) $3x - 5y = -14$
$-2x - y = -8$

**Write the system of linear equations for each augmented matrix.**

17) $\left[\begin{array}{cc|c} -2 & -2 & -10 \\ -3 & 2 & -5 \end{array}\right]$

**Find the reduced row-echelon form for each system of linear equations.**

18) $2x + 3y = 6$
$3x - 4y = -25$

19) $3x - 2y + 5z = 3$
$3x + z = 1$
$2x - 3y + 5z = 2$

**Solve each system of linear equations using Gaussian or Gauss-Jordan elimination.**

20) $4x - y = 1$
$2x - y = 1$

**Find the partial fraction decomposition of each.**

21) $\dfrac{-2x^5 + 24x^3 - 71x + 2x^4 - 36x^2 + 134}{x^5 - 10x^3 + 25x - 4x^4 + 40x^2 - 100}$

22) Evaluate the determinant.
$\begin{vmatrix} 1 & 0 & 2 & 5 \\ 2 & -1 & 0 & -2 \\ 1 & 1 & 0 & -2 \\ 0 & 0 & -3 & 0 \end{vmatrix}$

23) Find the Minor and Cofactor for Row 3 Column 2.
$\begin{bmatrix} 1 & -2 & 3 & 0 \\ -1 & 1 & 0 & 2 \\ 0 & 2 & 0 & 3 \\ 3 & 4 & 0 & 2 \end{bmatrix}$

24) Find the area of the triangle through points (0,0), (4,1) and (2,5)

25) Are the following points collinear? (-2,4), (3,-1) and (6,-4)

# Answers to Practice Test Chapter 8 (ID: 1)

1) $\begin{bmatrix} -12 \\ 3 \\ -13 \end{bmatrix}$

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

3) $\begin{bmatrix} 22 \\ -10 \end{bmatrix}$

4) $\begin{bmatrix} -40 \\ 15 \\ 10 \\ -10 \end{bmatrix}$

5) $\begin{bmatrix} -19 & -13 \\ 17 & 5 \\ -4 & -34 \end{bmatrix}$

6) $\begin{bmatrix} 18 & -18 & 18 \\ 12 & -12 & 12 \end{bmatrix}$

7) 57

8) 30

9) −86

10) No inverse exists

11) $\begin{bmatrix} \frac{2}{5} & 1 & -\frac{13}{10} \\ -\frac{1}{5} & -1 & \frac{7}{5} \\ -\frac{2}{5} & 0 & \frac{3}{10} \end{bmatrix}$

12) $\left(\frac{29}{8}, -\frac{25}{8}\right)$

13) $(-3, 0, 2)$

14) $\begin{bmatrix} 5 \\ 3 \\ 4 \end{bmatrix}$

15) $\begin{bmatrix} 5 & -4 \\ -11 & 9 \end{bmatrix}$

16) $\left[\begin{array}{cc|c} 3 & -5 & -14 \\ -2 & -1 & -8 \end{array}\right]$

17) $-2x - 2y = -10$
$-3x + 2y = -5$

18) $\left[\begin{array}{cc|c} 1 & 0 & -3 \\ 0 & 1 & 4 \end{array}\right]$

19) $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{array}\right]$

20) $(0, -1)$

21) $-2 - \frac{6}{x-4} + \frac{4}{x^2-5} - \frac{1}{(x^2-5)^2}$

22) 57

23) M=24, C=-24

24) 9 sq. units

25) Yes, they are collinear.