Pre Calculus
Ch8 Review #1

Name_____
Date_____Period_____

1. Solve for x if $\begin{bmatrix} 10 & -5 & 0 \\ x/3 & 15 & 17 \\ -2 & 4 & -3 \end{bmatrix} = \begin{bmatrix} 10 & -5 & 0 \\ 2x-10 & 15 & 17 \\ -2 & 4 & -3 \end{bmatrix}$

2. Solve for x: (show work) $\begin{bmatrix} -2 & -1 & 0 \\ x & 3 & 2 \end{bmatrix}\begin{bmatrix} 1 & -4 \\ 0 & 2 \\ 3 & 1 \end{bmatrix} = \begin{bmatrix} -2 & 6 \\ 3 & 20 \end{bmatrix}$

3. A small corporation borrowed $500,000 to build a new office building. Some of the money was borrowed at 9% interest, some at 10% interest, and some at 12% interest. How much was borrowed at each rate if the annual interest was $52,000 and the amount borrowed at 10% was 2.5 times the amount borrowed at 9%?

4. **Without a calculator**, solve the systems of equations by writing an augmented matrix and using Gauss-Jordan elimination (show all steps).

a) $\begin{cases} -3x+2y=0 \\ x-y=-1 \end{cases}$

b) $\begin{cases} 4x+3y=5 \\ 3x+2y=4 \end{cases}$

5. Let $A=\begin{bmatrix} 2 & 3 \\ -1 & 1 \\ 0 & 2 \end{bmatrix}$ and $B=\begin{bmatrix} 1 & -1 \\ 0 & 2 \\ 2 & 0 \end{bmatrix}$ **Without a calculator,** solve for X *if* $3X-2A=B$ (show work)

6. If $A=\begin{bmatrix} 2 & 1 \\ -1 & 3 \end{bmatrix}$, find A^{-1}

7. Solve the system of equations by using Cramer's Rule.

$$\begin{cases} 2x - y + z = 5 \\ 3x + 2y + 5z = 18 \\ x - y + 4z = 5 \end{cases}$$

8. Let $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & -1 & 1 \\ -1 & 1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 6 \\ -2 \\ 0 \end{bmatrix}$ Use a matrix inverse to solve for X *if* $AX = B$ (show work)

9. Evaluate using the method of expansion by minors and cofactors: $\begin{vmatrix} 0 & 2 & 1 \\ 3 & -1 & 2 \\ 4 & 0 & 1 \end{vmatrix}$

10. Use a determinant to find the area of a triangle with vertices at $(-1,-4)$, $(3,-2)$, $(6,8)$

11. Set up and use the determinant of a matrix to determine if (2,4), (-3,-6), and (1,-2) are collinear.

12. Find the value of x that makes the triangle formed by the three ordered pairs have an area of 12.
$(2,3),(1,0),(-1,x)$