Pre Calculus **Ch 8 Matrix Practice & systems**

Name: _____ **Date:** _____ **Per:** _____

SHOW ALL WORK UNDER PROBLEMs FOR CREDIT➔

Work on this WS [AutoSave-ON]

1) A company that manufactures bicycles, has a fixed cost of $100,000. It costs $100 to produce each bicycle. The selling prices is $300 per bike. Determine the **break-even *point***, **explain** what this point means ***and*** determine what is the minimum number of bikes that need to be sold to start making a profit.

C(*x*)=_____ R(*x*)=_____

2) For the linear function f(x) = ***m***x + **b**, $f(-3) = 23$ *and* $f(2) = -7$. **Find *m* and b**.
Set up a *system to solve this →

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3) The sum of three times a first number [***f***] and twice a second number [***n***] is 8. If the second number is subtracted from twice the first number the result is 3. **Find the numbers**. [Declare Variables & Set up a *system to solve] →

VARs:

Let ***f*** =	
Let ***n*** =	

{

4) The "**solution**" to a System of Linear equations in ***2-variables*** is called a(n)?

5) The "**solution**" to a System of Linear equations in ***3-variables*** is called a(n)?

6) List **ALL 5 ways** that may be used to *solve* a System of Linear equations.

7) ***Write a Matrix equation*** for the *system use to solve *prob. #3* above.
[hint: must be in standard form]➔

Sys.→ {

8) Given the matrix **A** below, Find: a) the ***Order of Matrix A***

b) the ***Scalar Product***

A ➔ $5\begin{bmatrix} 5 & -8 & 0 \\ 7 & 1 & -2 \\ 3 & 2 & 6 \end{bmatrix}$

1)
Break-even ***point:*** _____

Explain: _____

_____

_____

_____

Minimum number of bikes to start making a **profit**➔

2) The value of b = _____

The value of m = _____

3) First # →

Second # →

4)

5)

6)
_____

_____

_____

_____

_____

7)
$\begin{bmatrix} & \end{bmatrix}\begin{bmatrix} & \end{bmatrix} = \begin{bmatrix} & \end{bmatrix}$

8)
a) _____

b) $\begin{bmatrix} & \end{bmatrix}$

9)

10) a)

b)

c)

9) **Solve** the following *system* by **<u>using Cramer's Rule</u>**. **SHOW ALL WORK FOR CREDIT!**! **Set up each determinant.**

$$\begin{cases} 2x - 7y = 2 \\ 3x + y = -20 \end{cases}$$

10) **Fill in the blanks**: a) To use Cramer's Rule The matrix must be a _____.

b) If A = $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$, the **Matrix** is **Invertible** If and only if _____.

c) What *property of Algebra does not work* with Matrices? _____.

EXTRA CREDIT➔ Solve the following system using Cramer's Rule. ➔ **Ans:**

Show the <u>set-up</u> of the ***Major and Minor(s) determinants***. **[Use a calculator to evaluate the determinants.]**

$$\begin{cases} \mathbf{2x + 2y + 3z = 10} \\ \mathbf{4x - y + z = -5} \\ \mathbf{5x - 2y + 6z = 1} \end{cases}$$