

**Homework: Matrices I**

name: \_\_\_\_\_

Due Tuesday, March 1.

1. (Reference Definition page 514.)

a. What are the dimensions of the matrices given here?

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

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

$$[ 3 \ 5 \ 4 \ -2 ]$$

b. If you have a  $4 \times 5$  augmented matrix that represents a system of equations, how many equations did the system have, and how many variables did the system have?

2. a. Write the augmented matrix that corresponds to each of the following systems of equations. (Reference page 515.)

$$\begin{aligned} x + 3z &= 3 \\ 2x + y - 2z &= 5 \\ -y + 8z &= 8 \end{aligned}$$

$$\begin{aligned} x + 12y &= 4 \\ y &= 3 \\ x + y &= -12 \end{aligned}$$

b. Write the system of equations that corresponds to the given augmented matrix. (One of the systems has an equation that does not make sense.)

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 3 & -2 & 1 \\ -4 & -3 & -5 & -12 \end{bmatrix}$$

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

$$\begin{bmatrix} -1 & 2 & 8 \\ 0 & 0 & 4 \end{bmatrix}$$

3. a. Does  $(x, y, z) = (2, 3, 5)$  satisfy this system of equations? Explain what you have to do to check.

$$\begin{aligned} 2x - y + z &= 6 \\ -2y + z &= -1 \end{aligned}$$

b. Can you find any numbers  $(x, y)$  that satisfy this system of equations? Why not?

$$\begin{aligned} x + 2y &= 3 \\ x + 2y &= -2 \end{aligned}$$