

## College Algebra Quiz 9

Name \_\_\_\_\_ Score \_\_\_\_\_

**Please Print Clearly**

- Two matrices  $\begin{bmatrix} a_{ij} \end{bmatrix}$  and  $\begin{bmatrix} b_{ij} \end{bmatrix}$  are equal if they have the same **order** and their corresponding **entries** are equal.
- A matrix is a **rectangular array** of numbers.
- The sum of two matrices  $A = \begin{bmatrix} a_{ij} \end{bmatrix}$  and  $B = \begin{bmatrix} b_{ij} \end{bmatrix}$  of the same order  $m \times n$  is the  $m \times n$  matrix defined by  
 $A + B = \begin{bmatrix} a_{ij} + b_{ij} \end{bmatrix}$
- A **scalar** is a real number
- The identity matrix of order  $n$  is the  $n \times n$  matrix whose main **diagonal** entries are **1** and all other entries are **0**.
- Write the 3 X 3 identity matrix

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

- (2 points) Compute the matrix sum

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

- (2 points) Compute the matrix product.

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

$$= \begin{bmatrix} -3 & 13 & 5 \\ 8 & 8 & -24 \\ -3 & 1 & 11 \end{bmatrix}$$