

Name _____

Date _____

Advanced Algebra

Unit 6: Finding the Inverse of a 2 by 2 Matrix Assignment #7

The determinant of a 2 by 2 Matrix can be given by the following:

$$\frac{1}{ad-bc} * \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

Use the determinant to quickly find the inverse of the following 2 by 2's

$$1) \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 3 & -9 \\ -1 & 4 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$2) \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 1 & -2 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$3) \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 3 & 2 \\ 5 & -4 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$4) \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 3 & 2 \\ 9 & -5 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$5) \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} 5 & -4 \\ 1 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Use the determinant to find the Inverse and solve the matrix systems:

$$\begin{bmatrix} 2 & -6 \\ 1 & 10 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -14 \\ 32 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -7 \\ -9 \end{bmatrix}$$