

Section/Lesson Title: AUGMENTED MATRICES

Materials: WS, CALCULATOR

HW# 2.11 WS

Reflections:

I AUGMENTED MATRICES

1st SIZE = row x column

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \quad 2 \times 2 \quad \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \quad 2 \times 3$$

2nd EQUATIONS \leftrightarrow AUGMENTED MATRICES

$$\begin{array}{r} y + 5z = -14 \\ -2x + 3y - z = 2 \\ 6x - 3z = 21 \end{array} \rightarrow \left[\begin{array}{ccc|c} 0 & 1 & 5 & -14 \\ -2 & 3 & -1 & 2 \\ 6 & 0 & -3 & 21 \end{array} \right]$$

$$\begin{array}{r} x + y + z = 4 \\ y = 3x - 6z \\ \frac{1}{2}x + 2z = -5 \end{array} \rightarrow \left[\begin{array}{ccc|c} 1 & 1 & 1 & 4 \\ -3 & 1 & 6 & 0 \\ \frac{1}{2} & 0 & 2 & -5 \end{array} \right] \text{ or } \begin{array}{r} 3 - 1 - 6 = 0 \\ \frac{1}{2} - 0 - 2 = -\frac{3}{2} \end{array}$$

3rd SOLVING \rightarrow REDUCED ROW ECHELON FORM (RREF)

$$\left[\begin{array}{ccc|c} 1 & 2 & 3 & -2 \\ 0 & 2 & -5 & 6 \\ 3 & 3 & 10 & -2 \end{array} \right] \rightarrow \left[\begin{array}{ccc|c} 1 & 0 & 0 & 8 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 1 & -2 \end{array} \right]$$

$$\begin{array}{l} x = 8 \\ y = -2 \\ z = -2 \end{array} \quad (8, -2, -2)$$

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Shows an
calc