Daily Lesson Plan Advanced Math Krista Johnson

Section/Lesson Title: DIFFERENT CLASSIFICATIONS OF SYSTEMS

Materials: WS, CALC, OVERHEAD OF PLANES

HW# PAGE 211 WS

Reflections:

I DIFFERENT TYPES OF SOLUTIONS

GO OVER THE OVERHEAD : INDEPENDENT
DEPENDENT
INCONSISTENT

A: $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 3 \end{array}\right]$ HAS A UNIQUE SOLUTION → INDEPENDENT
(2, -1, 3)
3 PLANES INTERSECT IN 1 POINT

B. $\left[\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 0 & 3 \end{array}\right]$ → $0 = 3$ IS FALSE → INCONSISTENT
NO SOLUTION
THE PLANES DO NOT ALL INTERSECT
(2 OR 3 PLANES ARE //)

C. $\left[\begin{array}{ccc|c} 1 & 0 & 5 & 2 \\ 0 & 1 & 4 & -1 \\ 0 & 0 & 0 & 0 \end{array}\right]$ → $0 = 0$ IS TRUE SO SOLUTIONS DO EXIST, BUT THERE ARE MANY SOLUTIONS, NOT JUST 1
THE SYSTEM IS DEPENDENT
3 PLANES INTERSECT IN A LINE

$1x + 5z = 2 \rightarrow x = 2 - 5z$
$1y + 4z = -1 \rightarrow y = -1 - 4z$
$z = z$

$(2 - 5z, -1 - 4z, z)$

ex (2, -1, 0)
(-3, -5, 1)
etc

→

Try:

① $x + 2y + z = 3$
$y + 2z = 3$ ∅
$y + 2z = 5$

② $x + y = 3$
$3x + y = 15$ $(6, -3, -2)$
$5x + y + z = 25$

③ $2x + y + 4z = 4$
$x - 3y + 2z = 2$ $(2 - 2z, 0, z)$ same as ws #3
$3x + y + 6z = 6$ $(0, 0, 1)$

$x + 2y - 7z = -4$
$2x + y + z = 13$
$3x + 9y - 36z = -33$

$$\begin{bmatrix} 1 & 0 & -3 & 10 \\ 0 & 1 & -5 & -7 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$(10 - 3z, -7 + 5z, z)$

$(10, -7, 0)$

$(7, -2, 1)$