3.6 Solving Linear Systems in 3 Variables.

CA #2 9/29/09

Ex.1
$$\begin{cases} x+2y-3z=-2 \checkmark & (1) \\ 2x-2y+z=7 \checkmark & (2) \\ x+y+2z=-4 \checkmark & (3) \end{cases}$$

(x, y, z) 1 -1

$(1, -3, -1)$

$x+2y-3z=-2$
$1+2y-3(-1)=-2$
$2y+4=-2$
$2y=-6$
$y=-3$

(1) $x+\cancel{2y}-3z=-2$
(2) $+\ 2x+\cancel{2y}+z=7$
$3x-2z=5$

(3) $2x+\cancel{2y}+4z=-8$
(2) $+\ 2x-\cancel{2y}+z=7$
$4x+5z=-1$

$3x-2z=5$
$4x+5z=-1$

$\cancel{12x}-8z=20$
$-\cancel{12x}-15z=3$
$-23z=23$
$z=-1$

$4x+5(-1)=-1$
$4x-5=-1$
$4x=4$
$x=1$

Visit out 1.

$$\begin{cases} -x + y + 2z = 7 & (1) \\ 2x + 3y + z = 1 & (2) \\ -3x - 4y + z = 4 & (3) \end{cases}$$

2 & 3 cancel z

1 & 2 cancel z

$+$

$+$

$$\begin{aligned} \cancel{5x} + 7y &= -3 \\ -\cancel{5x} - 5y &= 5 \\ \hline 2y &= 2 \\ y &= 1 \end{aligned}$$

$-5x - 5y = 5$

A $(3, 1, 2)$
B $(2, 1, -2)$
C $(-2, 1, 2)$
D ????

Ex. 3

$15 = 0$ False

No Solution

inconsistent

$5 = 5$ True

$x = x$ Infinite