100.

5.65	+	8.95	=	10(6.97)
x	+	y	=	10

$$\begin{cases} 5.65x + 8.95y = 69.7 \\ x + y = 10 \end{cases}$$

$x + y = 10$

$-y \quad -y$

$x = 10 - y$

$5.65(10-y) + 8.95y = 69.7$

$56.5 - 5.65y + 8.95y = 69.7$

$56.5 + 3.30y = 69.7$

$-56.5 \quad -56.5$

$\frac{3.30y}{3.3} = \frac{13.2}{3.3}$

$y = 4$ lbs

$x = 6$ lbs

0-3+

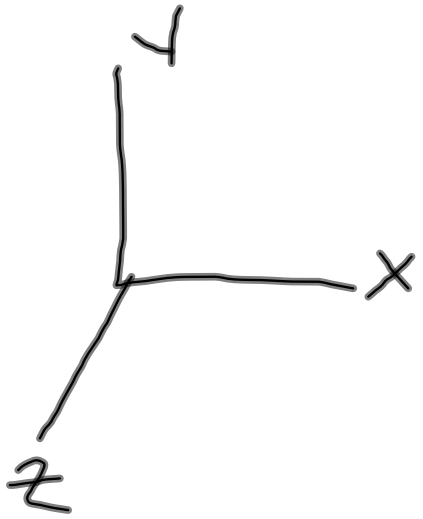
4-6 ✓

7+-

4.2 Systems w/ 3 variables

Solutions: intersection of 3 lines.

(x, y, z)



Ex: is $(4, -2, 2)$ a
$x \quad y \quad z$

Solution to: $\begin{cases} 2x+5y+z=0 \\ 3x+2y-4z=0 \\ y+z=0 \end{cases}$

$2(4)+5(-2)+2=0$

$8-10+2=0$

$0=0$ ✓

$3(4)+2(-2)-4(2)=0$

$12-4-8=0$

$0=0$ ✓

$-2+2=0$

$0=0$ ✓

Back substitution: if you know 1 or more variables.

Ex: $\begin{cases} x - 2y + 2z = 9 \\ y + 2z = 5 \\ z = 3 \end{cases}$

$y + 2(3) = 5$

$y + 6 = 5$

$-6 \quad -6$

$y = -1$

$x - 2(-1) + 2(3) = 9$

$x + 2 + 6 = 9$

$x + 8 = 9$

$-8 \quad -8$

$x = 1$

$(1, -1, 3)$

Elimination :

$$\begin{cases} 3x-2y+z=9 \\ x+y-2z=-8 \\ -x-2y+3z=13 \end{cases}$$

$$\begin{array}{r} x+y-2z=-8 \\ -x-2y+3z=13 \\ \hline -1y+z=5 \end{array}$$

$$\begin{array}{r} 3x-2y+z=9 \\ -x-2y+3z=13 \quad (-3) \end{array}$$

$$\begin{array}{r} 3x-2y+z=9 \\ -3x-6y+9z=39 \\ \hline -8y+10z=48 \end{array}$$

$$\begin{array}{r} -1y+z=5 \quad (-8) \\ -8y+10z=48 \\ \hline \end{array}$$

$$\begin{array}{r} 8y-8z=-40 \\ -8y+10z=48 \\ \hline 2z=8 \\ \frac{2z}{2}=\frac{8}{2} \\ z=4 \end{array}$$

$$\begin{array}{r} -1y+z=5 \\ -1y+4=5 \\ -4 \quad -4 \\ \hline -1y=1 \\ \frac{-1y}{-1}=\frac{1}{-1} \\ y=-1 \end{array}$$

$$x+y-2z=-8$$

$$x-1-2(4)=-8$$

$$x-1-8=-8$$

$$x-9=-8$$

$$+9 \quad +9$$

$$x=1$$

$$(1,-1,4)$$

HW: p. 258

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