7.6 p. 527

ex 8 $x+3y-6z=1$

$2x-y+z=7$

$x+2y+2z=14$

$\cdot(-1)$ → $-x-3y+6z=-1$

$x+2y+2z=14$

$-y+8z=13$

$2x-y+z=7$

$\cdot(-2)$ → $-2x-4y-4z=-28$

$-5y-3z=-21$

$\cdot(-5)$ → $5y-40z=-65$

$-5y-3z=-21$

$-43z=-86$

$z=2$

$x+3y-6z=1$

$x+3(3)-6(2)=1$

$x+9-12=1$

$x-3=1$

$x=4$

$-y+8z=13$

$-y+8(2)=13$

$-y+16=13$

$-y=-3$

$y=3$

$(4,3,2)$

Feb 1-6:35 PM

$x+y-2z=-4$

$2x+3y=5$

$8x=8$ → $8x=8$

$x=1$

$(1,1,3)$

$x+y-2z=-4$

$1+1-2z=-4$

$2-2z=-4$

$-2z=-6$

$z=3$

$2x+3y=5$

$2\cdot1+3y=5$

$2+3y=5$

$3y=3$

$y=1$

Feb 1-6:55 PM

$3x + 2y - 2z = 7$

$2x + 3z = 9$

$4z = 4 \rightarrow z = 1$

$2x + 3z = 9$

$2x + 3 \cdot 1 = 9$

$2x + 3 = 9$

$2x = 6$

$x = 3$

$3x + 2y - 2z = 7$

$3 \cdot 3 + 2y - 2 \cdot 1 = 7$

$9 + 2y - 2 = 7$

$7 + 2y = 7$

$2y = 0$

$y = 0$

$(3, 0, 1)$

Feb 1-6:59 PM

ex 10

$-3x + y - z = -10$

$-4x + 2y + 3z = -1 \rightarrow -4x + 2y + 3z = -1$

$2x + 3y - 2z = -5 \rightarrow \cdot 2 \quad 4x + 6y - 4z = -10$

$8y - z = -11$

$\downarrow \cdot (-8)$

$-64y + 8z = 88$

2. 1st

3. 3rd

$-6x + 2y - 2z = -20$

$6x + 9y - 6z = -15$

$11y - 8z = -35$

$11y - 8z = -35$

$-53y = 53$

$y = -1$

$8y - z = -11$

$8(-1) - z = -11$

$-8 - z = -11$

$-z = -3$

$z = 3$

$-3x + y - z = -10$

$-3x - 1 - 3 = -10$

$-3x - 4 = -10$

$-3x = -6$

$x = 2$

$(2, -1, 3)$

Feb 1-7:03 PM

ex 20

$\left(\frac{2}{3}x - \frac{1}{4}y + \frac{5}{8}z = 0\right)(24)$

$\left(\frac{1}{5}x + \frac{2}{3}y - \frac{1}{4}z = -7\right)(60)$

$\left(-\frac{3}{5}x + \frac{4}{3}y - \frac{7}{8}z = -5\right)(120)$

$16x - 6y + 15z = 0$

$12x + 40y - 15z = -420$ } $28x + 34y = -420$

$-72x + 160y - 105z = -600$

$112x - 42y + 105z = 0$ } $40x + 118y = -600$

top $\cdot 10$ $280x + 340y = -4200$

bottom $\cdot(-7)$ $-280x - 826y = 4200$

$-486y = 0$

$y = 0$

$40x + 118(0) = -600$

$40x = -600$

$x = -15$

$16x - 6y + 15z = 0$

$16(-15) + 15z = 0$

$-240 + 15z = 0$

$15z = 240$

$z = 16$

$(-15, 0, 16)$

Feb 1-7:13 PM

ex 34

$5x - z = 38$

$12\left(\frac{2}{3}y + \frac{1}{4}z = -17\right)$

$30\left(\frac{1}{5}y + \frac{5}{6}z = 4\right)$

$5x - z = 38$

(2) $8y + 3z = -204$

(3) $6y + 25z = 120$

$-3 \cdot 2nd$ $-24y - 9z = 612$

$4 \cdot 3rd$ $24y + 100z = 480$

$91z = 1092$

$z = 12$

$5x - 12 = 38$

$5x = 50$

$x = 10$

$8y + 3(12) = -204$

$8y + 36 = -204$

$8y = -240$

$y = -30$

$(10, -30, 12)$

Feb 1-7:40 PM

ex 42 $2x - 8y + 2z = -10$

$-x + 4y - z = 5$ ← same $\cdot(-1)$

$8\left(\frac{1}{8}x - \frac{1}{2}y + \frac{1}{8}z = -\frac{5}{8}\right)$ $x - 4y + z = -5$

(all same plane)

infinite # of solutions

$\{(x, y, z) \mid -x + 4y - z = 5\}$

Feb 1-7:49 PM

ex 36

$$\begin{cases} -2x + 5y + z = -3 \\ 5x + 14y - z = -11 \\ 7x + 9y - 2z = -5 \end{cases}$$

$\cdot 2$

① + ② $3x + 19y = -14$

$-4x + 10y + 2z = -6$

$7x + 9y - 2z = -5$

$3x + 19y = -11$ $\cdot(-1)$

$3x + 19y = -14$

$-3x - 19y = 11$

$0 = -3$

no solution

Feb 1-7:54 PM