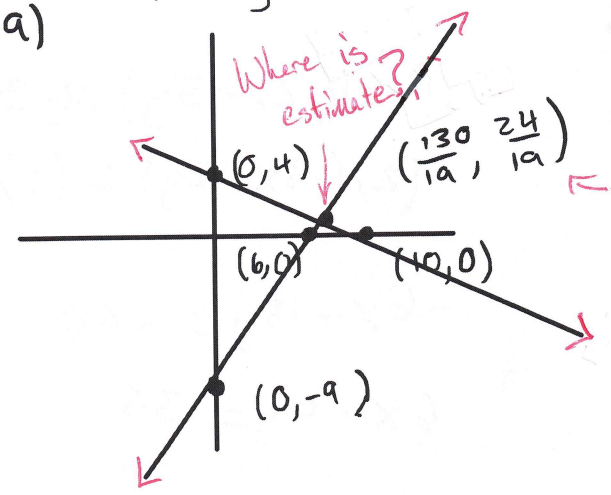
Jade Guenigault
Writing Project #4
4/18/23

1) $2x+5y=20$
$3x-2y=18$

a)



$2x+5y=20$

x	y
0	4
10	0

← exact point

$3x-2y=18$

x	y
6	0
0	-9

+9.5

b) $2x+5y=20$
$3x-2y=18$

$2x+5y=20$
$-5y \quad -5y$

$\frac{2x}{2} = \frac{20-5y}{2}$

$x = 10-\frac{5y}{2}$

$3x-2y=18$

$3(10-\frac{5y}{2})-2y=18$

$30-\frac{19y}{2}=18$

$-\frac{19y}{2}=18-30$

$-\frac{19y}{2}=-12$

$-\frac{2}{19}\cdot(-\frac{19}{2}) = -\frac{2}{19}\cdot -12$

$y=-\frac{2}{19}\cdot 12 = \frac{24}{19}$

$x=10-\frac{5y}{2}$

$x=10-\frac{5(\frac{24}{19})}{2}=\frac{130}{19}$

$y=\frac{24}{19}$

$(x,y)=(\frac{130}{19}, \frac{24}{19})$

+10

69.5/70 good job! :)

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c) $2x+5y=20$
$3x-2y=18$

$(-3)(2x+5y)=(-3)(20)$
$(2)(3x-2y)=(2)(18)$

$-6x-15y=-60$
$+\quad 6x-4y=36$

$\frac{-19y}{-19}=\frac{-24}{-19}$

$y=\frac{-24}{-19}=\frac{24}{19}$

$-6x-15\left(\frac{24}{19}\right)=-60$

$-6x-\frac{360}{19}=-60$

$+\frac{360}{19}\qquad \frac{+360}{19}\cdot\frac{19}{19}$

$-6x=\frac{-60\cdot 19+360}{19}$

$-6x=\frac{-1140+360}{19}$

+10

$\frac{-6x}{-6}=\frac{\frac{-780}{19}}{-6}$

$\frac{\frac{-780}{19}}{-6}=\frac{130}{19}$

$(x,y)=\left(\frac{130}{19},\frac{24}{19}\right)$

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(2)

$$2x-2y+z=-13$$
$$3x-5y-z=-21$$
$$x-2z=7$$

$$\left[\begin{array}{ccc|c} 2 & -2 & 1 & -13 \\ 3 & -5 & -1 & -21 \\ 1 & 0 & -2 & 7 \end{array}\right] \times\frac{1}{2}$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 3 & -5 & -1 & -21 \\ 1 & 0 & -2 & 7 \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 3-3\cdot1 & -5-3\cdot1 & -1-3(\frac{1}{2}) & -21-3(\frac{13}{2}) \\ 1 & 0 & -2 & 7 \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0 & -2 & -\frac{5}{2} & -\frac{3}{2} \\ 1 & 0 & -2 & 7 \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ -\frac{1}{2}\cdot0 & -\frac{1}{2}\cdot-2 & -\frac{1}{2}(-\frac{5}{2}) & -\frac{1}{2}(-\frac{3}{2}) \\ 0 & 1 & -\frac{5}{2} & \frac{27}{2} \end{array}\right]$$

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$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0 & 1 & \frac{5}{4} & \frac{3}{4} \\ 0 & 1 & -\frac{5}{2} & \frac{27}{2} \end{array}\right]$$

2 cont..

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0 & 1 & \frac{5}{4} & \frac{3}{4} \\ 0-0 & 1-1 & -\frac{5}{2}-\frac{5}{4} & \frac{27}{2}-\frac{3}{4} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0 & 1 & \frac{5}{4} & \frac{3}{4} \\ 0 & 0 & -\frac{15}{4} & \frac{51}{4} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0-\frac{5}{4}\cdot 0 & 1-\frac{5}{4}\cdot 0 & \frac{5}{4}-\frac{5}{4}\cdot 1 & \frac{3}{4}-\frac{5}{4}\left(-\frac{17}{5}\right) \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & -1 & \frac{1}{2} & -\frac{13}{2} \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1-\frac{1}{2}\cdot 0 & -1-\frac{1}{2}\cdot 0 & \frac{1}{2}-\frac{1}{2}\cdot 1 & -\frac{13}{2}-\frac{1}{2}\left(-\frac{17}{5}\right) \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

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$$\left[\begin{array}{ccc|c} 1 & -1 & 0 & -\frac{24}{5} \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

2 cont...

$$\left[\begin{array}{ccc|c} 1+0 & -1+1\cdot 1 & 0+0 & -\frac{24}{5}+1\cdot 5 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & \frac{1}{5} \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & -\frac{17}{5} \end{array}\right]$$

$x = \frac{1}{5}$ $y = 5$ $z = \frac{-17}{5}$

$\left(\frac{1}{5}, 5, -\frac{17}{5}\right)$ +10

③ $7x + 17y + 27z = 30$

a) $2x + 5y + 8z = 8$

$x + 2y + 3z = 6$

$x + 2y + 3z = 6$

$-2y \quad -2y$

$x + 3z = 6 - 2y$

$-3z \quad -3z$

$x = 6 - 2y - 3z$

$7(6-2y-3z) + 17y + 27z = 30$

- $42 + 3y + 6z = 30$

$2(6-2y-3z) + 5y + 8z = 8$

- $12 + y + 2z = 8$

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$12y + y + 2z = 8$
$-12 \qquad\qquad -12$

$y + 2z = 8 - 12$
$-2z \qquad -2z$

$y = 8 - 12 - 2z$
$y = -4 - 2z$

$42 + 3(-4 - 2z) + 6z = 30$

$30 = 30$

$x = 6 - 2(-4 - 2z) - 3z$

$x = 14 + z$
$y = -4 - 2z$

+10

b) $z = 0$

$x = 14 + 0$
$x = 14$

$y = -4 - 2z$
$y = -4$

$x, y, z = (14, -4, 0)$

$z = 1$

$x = 14 + 1$
$x = 15$

$y = -4 - 2(1)$
$y = -6$

$x, y, z = (15, -6, 1)$

$z = -1$

$x = 14 + (-1)$
$x = 13$

$y = -4 - 2(-1)$
$y = -2$

$x, y, z = (13, -2, -1)$

good!

+10

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④ $7x+17y+27z=30$

$2x+5y+8z=3$

$x+2y+3z=6$

$x+2y+3z=6$

$-2y$

$x+3z=6-2y$

$-3z$

$x=6-2y-3z$

$7(6-2y-3z)+17y+27z=30$

$42+3y+6z=30$

$2(6-2y-3z)+5y+8z=30$

$12+y+2z=3$

$y+2z=3-12$

$-2z \quad -2z$

$y=-9-2z$

$42+3(-9-2z)+6z=30$

$15=30$

$x=6-2(-9-2z)-3z$

$x=24+z$

$15=30$

$y=-9-2z$

Absurd!

$15=30$

no solution NOT TRUE

+10