1. General vicinity:

$\frac{66}{70}$ good job! :)

This is the "guess" part
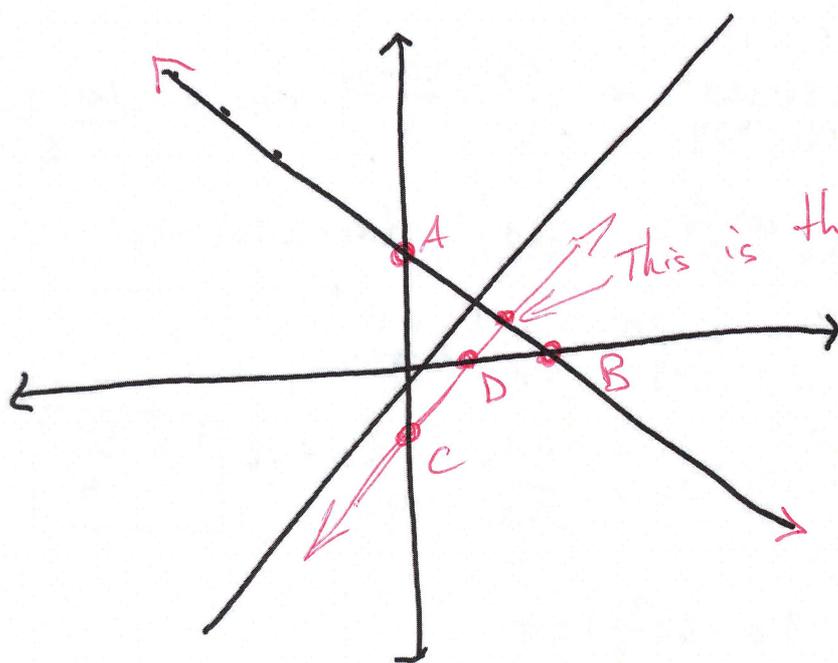
(This was actually pretty off I am realizing after doing b, and c)

Try this:

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

x	y
0	4
10	0

$(0,4)$ A
$(10,0)$ B

x	y
0	-9
6	0

$(0,-9)$ C
$(6,0)$ D

+6

1. Substitution

$2x + 5y = 20$

$3x - 2y = 18$

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

$$3\left(\frac{20 - 5y}{2}\right) - 2y = 18 \qquad 3(10 - 2.5y) - 2y$$

$$30 - 7.5y - 2y = 18$$
$$-30 \qquad \qquad -30$$

Yikes! Mixing fractions and decimals — pretty cringey. →

$$-9.5y = -12$$
$$-9.5y \qquad -9.5y$$

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

$$3x - 2\left(\frac{24}{19}\right) = 18$$

$$3x - \frac{48}{19} = 18 + \frac{48}{19}$$
$$+\frac{48}{19}$$

$$\frac{3x}{3} = \frac{390}{19} \Big/ 3 \qquad \boxed{x = \frac{130}{19}}$$

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

$$\checkmark = 2\left(\frac{130}{19}\right) + 5\left(\frac{24}{19}\right) = 20$$

$$\frac{260}{19} + \frac{120}{19} = 20 \qquad 20 = 20 \ \checkmark \quad +10$$

$$\frac{260 + 120}{19} \qquad \frac{380}{19}$$

1. Elimination.

#1. $2x + 5y = 20 \ (\times 2)$
#2. $3x - 2y = 18 \ (\times 5)$

$4x + 10y = 40$
$15x - 10y = 90$

$$\frac{19x}{19} = \frac{130}{19} \qquad \boxed{x = \frac{130}{19}}$$

$$2\left(\frac{130}{19}\right) + 5y = 20$$

$$\downarrow$$

$$\frac{260}{19} + 5y = 20 - \frac{260}{19}$$

$$- \frac{260}{19}$$

$$\frac{5y}{5} = \frac{120}{19} / 5 \qquad \boxed{y = \frac{24}{19}}$$

$$\boxed{\frac{130}{19} \qquad \frac{24}{19}}$$

$$\checkmark \ 3\left(\frac{130}{19}\right) - 2\left(\frac{24}{19}\right) = 18$$

$$\frac{390 - 48}{19} = 18 \qquad \frac{342}{19} = 18 \qquad 18 = 18 \ \checkmark$$

+10

2. Elimination

#1. $2x - 2y + z = -13$

#2. $3x - 5y - z = -21$

#3 $x - 2z = 7$

#1 + #2 $(5x - 7y = -34)(-1)$ $(2x - 2y + z = -13)(2)$

$(2)(\#1) \rightarrow 4x - 4y + 2z = -26$

$\#3 \rightarrow + 1x \qquad -2z = 7$

~~#1~~ $5x - 4y = -19$

~~#2~~ $-5x + 7y = 34$ $\boxed{Y = 5}$

$\dfrac{3y}{3} = \dfrac{15}{3}$

$5x - 4(5) = -19$

$5x - 20 = -19$ $\boxed{x = \dfrac{1}{5}}$

$\qquad +20 \quad +20$

$\dfrac{5x}{5} = \dfrac{1}{5}$

$\dfrac{1}{5} - 2z = 7$ $\dfrac{-2z}{-2} = \dfrac{34}{5} / -2$ $\boxed{z = \dfrac{-17}{5}}$

$-\dfrac{1}{5} \qquad -\dfrac{1}{5}$

+10

$\checkmark \quad 2\left(\dfrac{1}{5}\right) - 2(5) + \dfrac{-17}{5} = -13$

$\dfrac{2}{5} - 10 - \dfrac{17}{5} = -13$ $-10 + \dfrac{2 - 17}{5} = 13$

$-13 = -13 \checkmark$

3. $7x + 17y + 27z = 30$

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

$x + 2y + 3z = 6$

a.)

$7x + 17y + 27z = 30$

$2x + 5y + 8z = 8$ $\rightarrow$ $x = -2y - 3z + 6$

$x + 2y + 3z = 6$

$\quad -2y \quad -3z$

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

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

$-14y - 21z + 42 + 17y + 27z = 30$

$-4y - 6z + 12 + 5y + 8z = 8$

$3y + 6z = -12$ $x + 2(-4 - 2z) + 3z =$

$y + 2z = -4$ $x - 8 - 4z + 3z = 6$

$\boxed{y = -4 - 2z}$ $x - z = 14$

$\qquad\qquad\qquad +z \quad +z$

$3(-4 - 2z) + 6z = -12$ $\boxed{x = 14 + z}$

$-12 - 6z + 6z = -12$

$-12 = -12$

$\boxed{z = \text{any real \#}}$ good!

+10

$y = -4 - 2z \qquad x = 14 + z \qquad z = \text{any real number}$

3.

$z = -1.)$

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

$2 - 4$

$\boxed{y = -2}$

$x = -1 + 14$

$\boxed{x = 13}$

$\boxed{(13, -2, -1)}$

$\boxed{z = -1}$

$7(13) + 17(-2) + 27(-1) = 30$

$91 + -34 + -27 = 30$

$30 = 30$

$\boxed{(14, -4, 0)}$

$z = 0.)$

$x = 0 + 14 \quad \boxed{x = 014}$

$y = \cancel{-2(0) - 4} \quad -2(0) - 4 \quad \boxed{y = -4}$

$\boxed{z = 0}$

$z = 1.) \quad \boxed{(15, -6, 1)}$

$\boxed{z = 1}$

$y = -2(1) - 4 \quad y = -2 \cdot 4 \quad \boxed{y = -6}$

$x = 1 + 14 \quad \boxed{x = 15}$

+10

4. $7x + 17y + 27z = 30$

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

$x + 2y + 3z = 6$

$-2y-3z \qquad -2y-3z$

$\downarrow$

$x = 6 - 2y - 3z$

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

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

~~$4z + 3y + 6$~~

~~$x = 6 - 2y - 3z$~~

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

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

$12 - 4y - 6z + 5y + 8z = 3$

$4z + 3y + 6z = 30$

$12 - 4y - 6z + 5y + 8z = 3$

$12 + y + 2z = 3$

$-12 \qquad\qquad -2z -12 -2z$

$y = -9 - 2z$

$x = 6 - 2y - 3z$

$4z + 3(-9 - 2z) + 6z = 30$

$4z - 27 ~~- 6z + 6z~~ = 30$

$\boxed{15 = 30} \quad \times$

Since $15 \ne 30$ I can only assume there is no real solution. Arriving at $15=30$ is absurd.

+10