Which Systems Method to Use Key

a) $\begin{cases} x+2y=4 \\ x+1=5-2y \end{cases}$ → $2y=-x+4$

$x+1-5=-2y$

$x-4=-2y$

$-x+4=2y$

$-x+4=-x+4$ identity

I choose substitution
all methods required
Some algebra, but by solving
for $2y$ avoided fractions

any point satisfying
$x+2y=4$
is a solution

b) $\begin{cases} 3x-2y=-2 \\ 2x+y=8 \end{cases}$

Substitution
since one of the
y's has coeff. of 1

$y=-2x+8$

$3x-2(-2x+8)=-2$

$3x+4x-16=-2$

$+16 \quad +16$

$\frac{7x}{7}=\frac{14}{7} \Rightarrow x=2$

$y=-2(2)+8$

$=4$

$(2,4)$

c) $\begin{cases} y=x+2 \\ 3x-3y=-6 \end{cases}$

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

$3x-3x-6=-6$

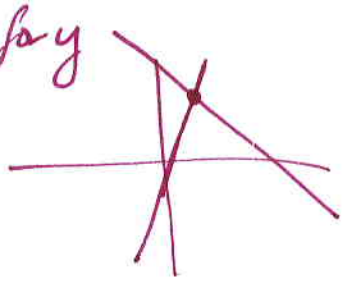
$-6=-6$

Choose substitution since
only one equation was
solved for y.

any point
satisfying
$y=x+2$
is a solution

d) $\begin{cases} y=3x-1 \\ y=-2x+5 \end{cases}$ graphing, since both solved for y

$(1.2, 2.6) = (\frac{6}{5}, \frac{13}{5})$



e) $\begin{cases} -6x-2y=4 \\ 5x+3y=-2 \end{cases}$ $*3$, $*2$ $\Rightarrow$ $-18x-6y=12$, $10x+6y=-4$

Chose elimination since I could avoid fractions that way

$\frac{-8x}{-8} = \frac{8}{-8}$

$x=-1$

$5(-1)+3y=-2$

$+5 \quad +5$

$3y=3 \Rightarrow y=1$

$(-1,1)$

f) $\begin{cases} x+2y=4 \\ x+4y+z=11 \\ 3x+3y-z=5 \end{cases}$ > add

$x+2y=4 \quad * -4$

$4x+7y=16$

$-4x-8y=-16$

$4x+7y=16$

$-y=0 \Rightarrow y=0$

$x+2(0)=4$

$x=4$

$x+4y+z=11$

$4+4(0)+z=11$

$-4 \quad -4$

$z=7$

$(4,0,7)$

Chose elimination (graphing is out w/ 3 variables)

since I could add 2nd & 3rd eq. to eliminate z & then 2 vars w/ result and 1st eq.

g) $\begin{cases} 2x+2y+5z=9 \\ -3x+4y+2z=13 \\ 3x+5y-7z=25 \end{cases}$ > add $\quad 9y-5z=38$

$6x+6y+15z=27$

g continued

$9y - 5z = 38 \quad *19$
$14y + 19z = 53 \quad *5$ $\rightarrow$

$171y - 95z = 722$
$70y + 95z = 265$

$241y = 987$

$\frac{241}{241}y = \frac{987}{241}$

$y = \frac{987}{241}$

$z = \frac{53 - 14y}{19} = \frac{-55}{241}$

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

$\frac{2x}{2} = \frac{9 - 2y - 5z}{2} = \frac{235}{241}$

$\left(\frac{235}{241}, \frac{987}{241}, \frac{-55}{241}\right)$

this answer checks out

used eliminations to avoid fractions until the end, but the numbers are large. The more variables there are, the more this happens.