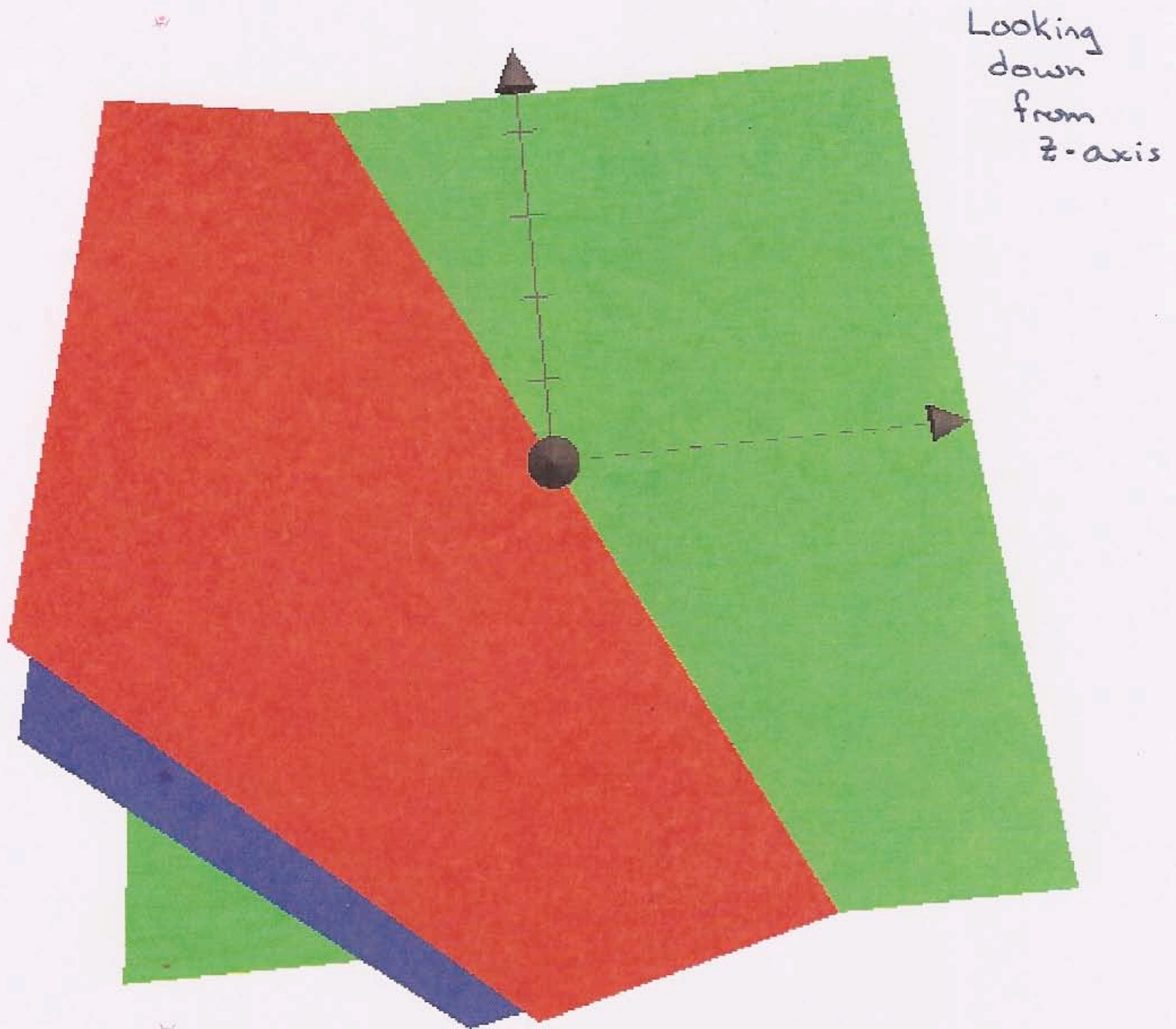


$$\begin{aligned}x_2 + 2x_3 &= 0 \\4x_1 + 5x_2 + 6x_3 &= 0 \\8x_1 + 9x_2 + 10x_3 &= 0\end{aligned}$$

Example 1



Notice all three planes go through the origin.



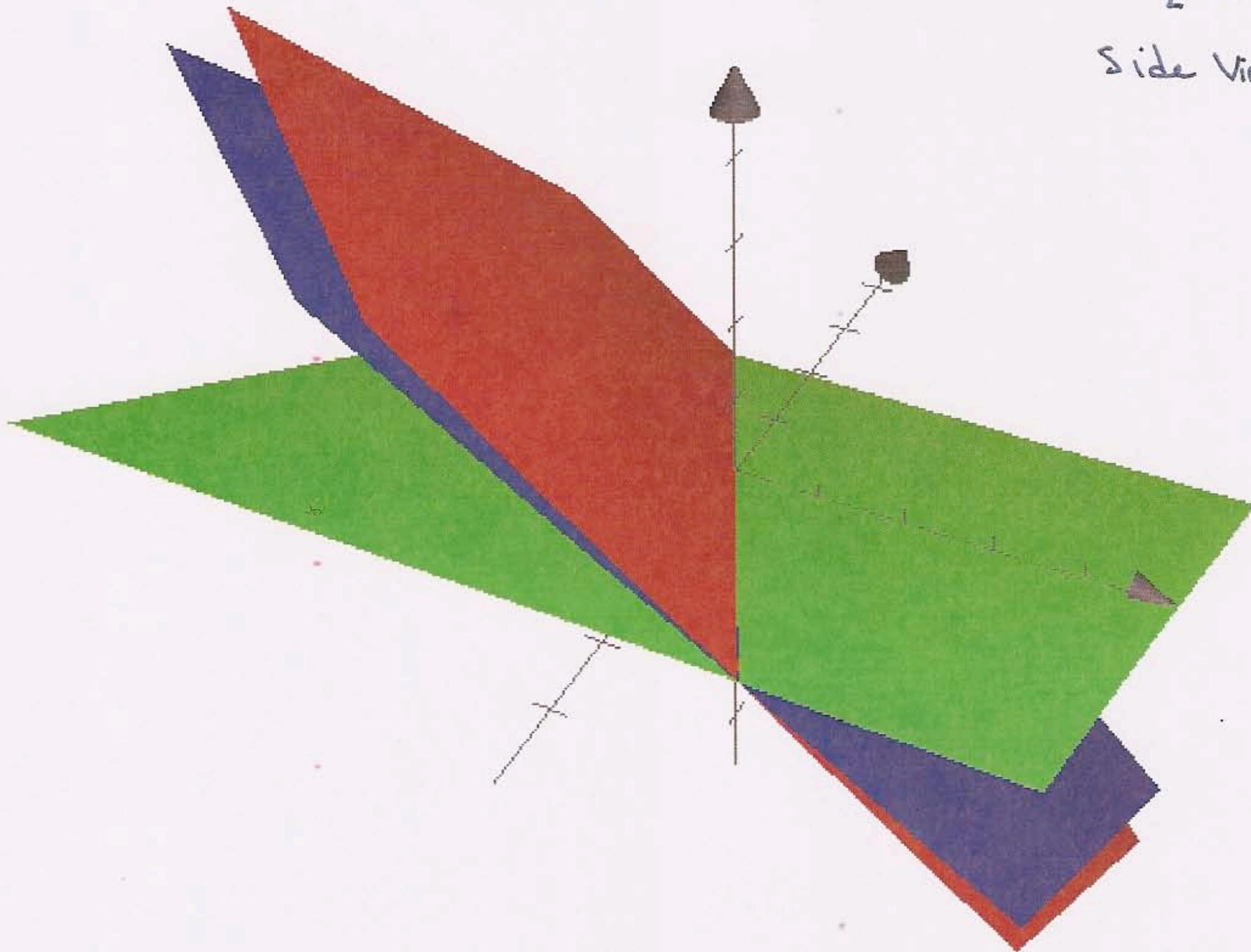
# Example 1

$$x_2 + 2x_3 = 0$$

$$4x_1 + 5x_2 + 6x_3 = 0$$

$$8x_1 + 9x_2 + 10x_3 = 0$$

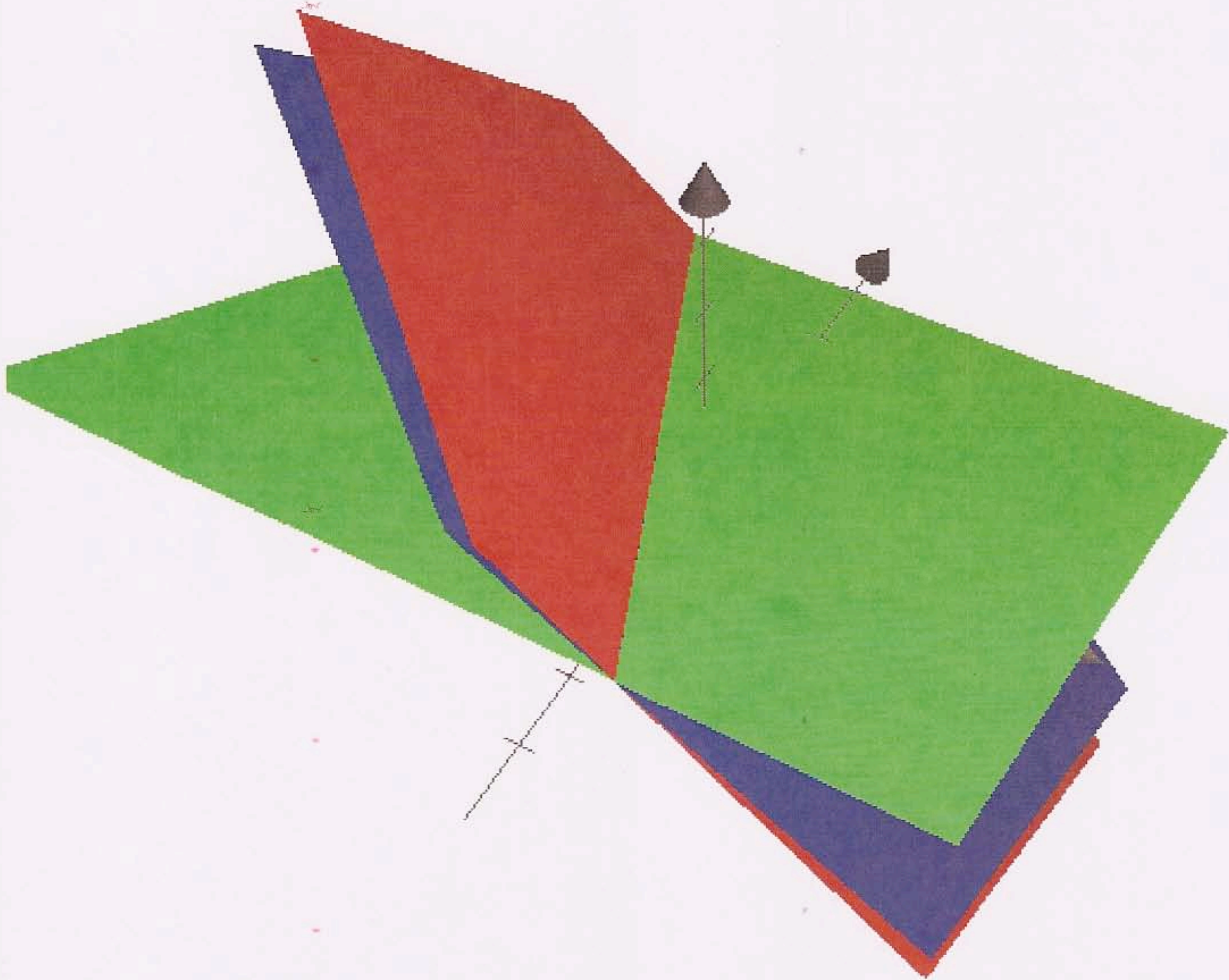
Side View





## Example 2

$$\begin{aligned}x_2 + 2x_3 &= 3 \\4x_1 + 5x_2 + 6x_3 &= 7 \\8x_1 + 9x_2 + 10x_3 &= 11\end{aligned}$$



$$\cancel{x_2 + 2x_3}$$

Notice that these are the same planes as in Example 1. ~~but~~ However, they are shifted in space.

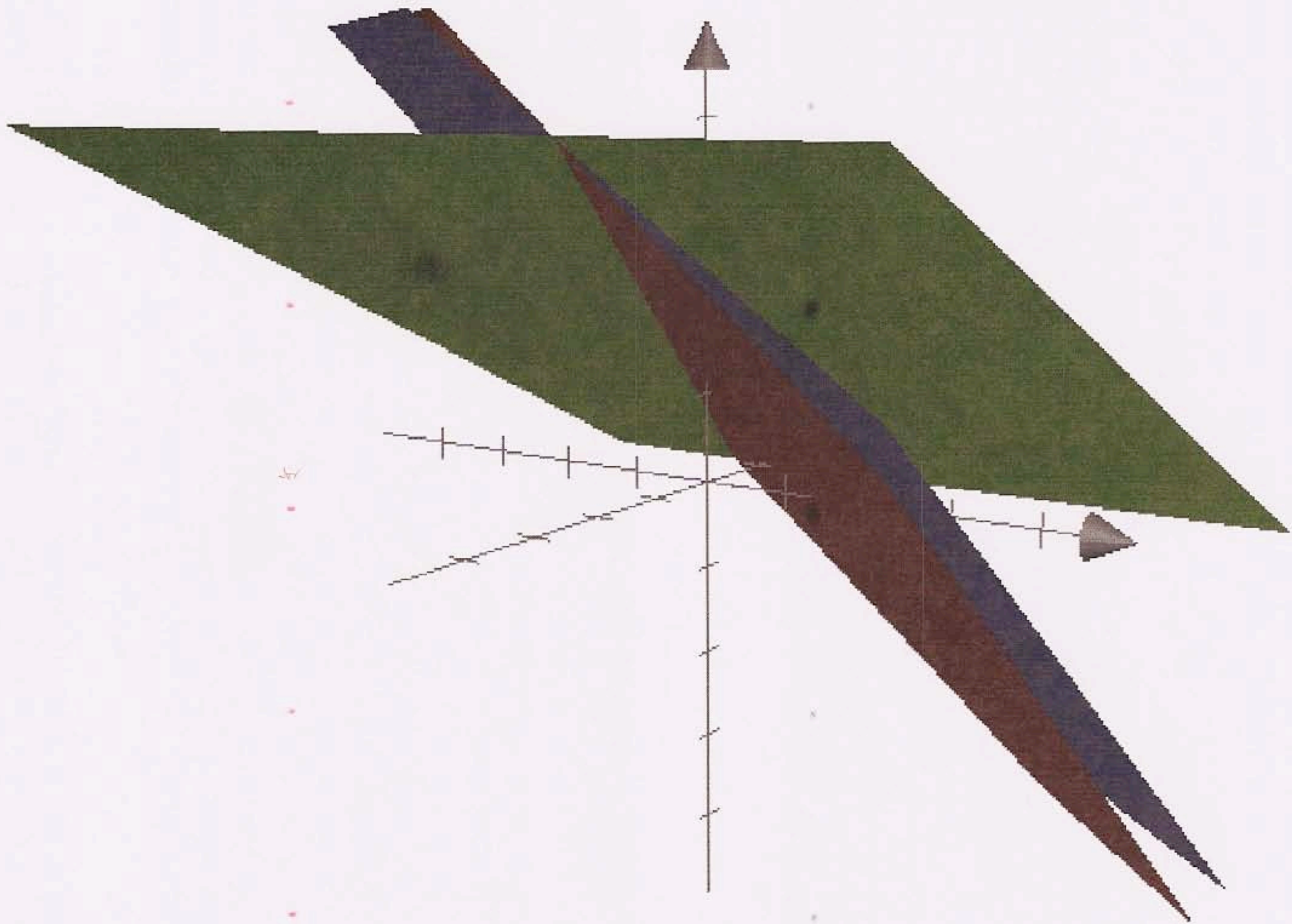


## Example 2

$$x_2 + 2x_3 = 3$$

$$4x_1 + 5x_2 + 6x_3 = 7$$

$$8x_1 + 9x_2 + 10x_3 = 11$$

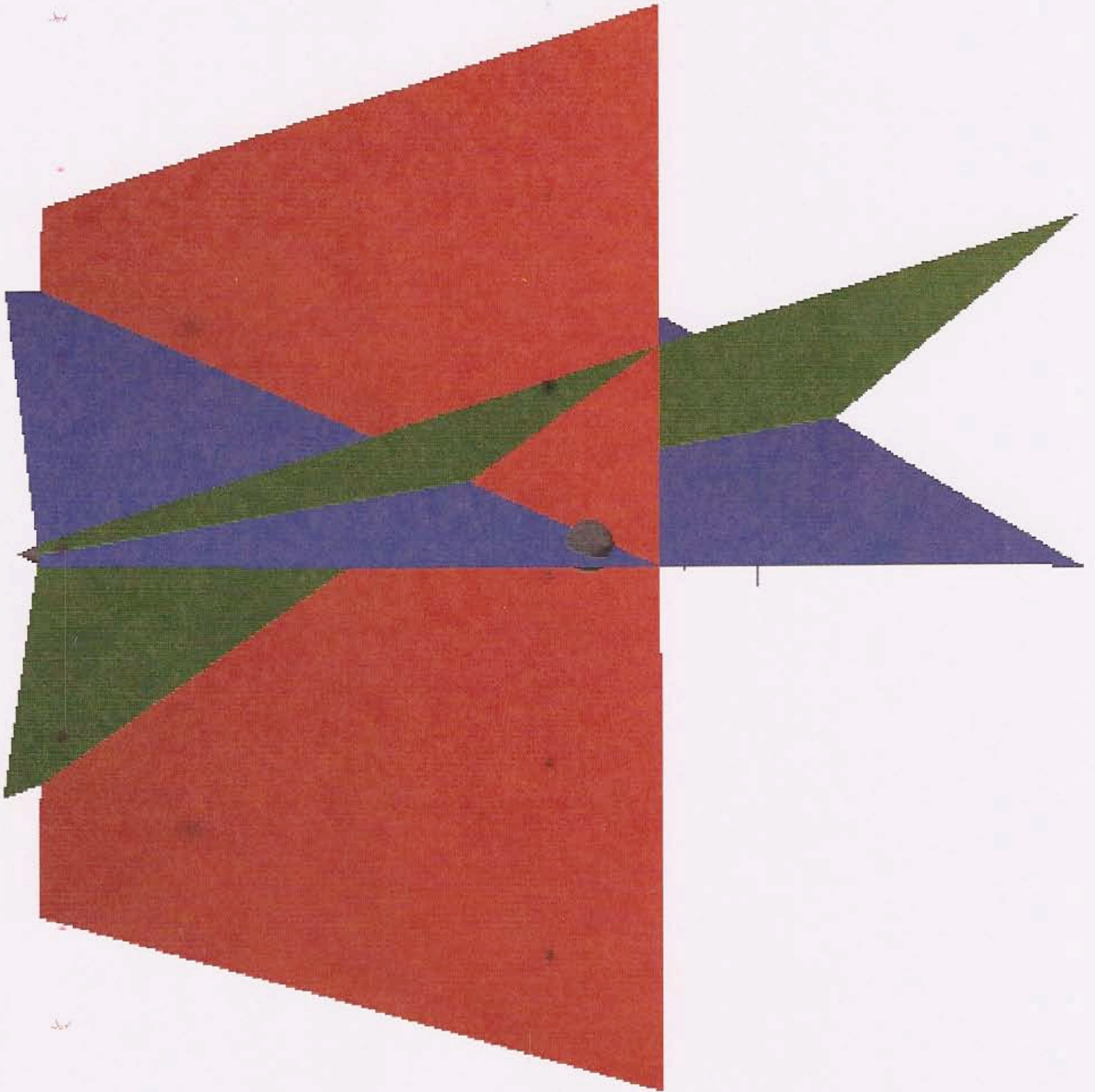


- The shift off the origin is clear here. This is caused by the presence of data on the RHS of the Eqn.

Q: Does it make sense that if all the planes were not shifted in a similar way then the system may have become inconsistent?



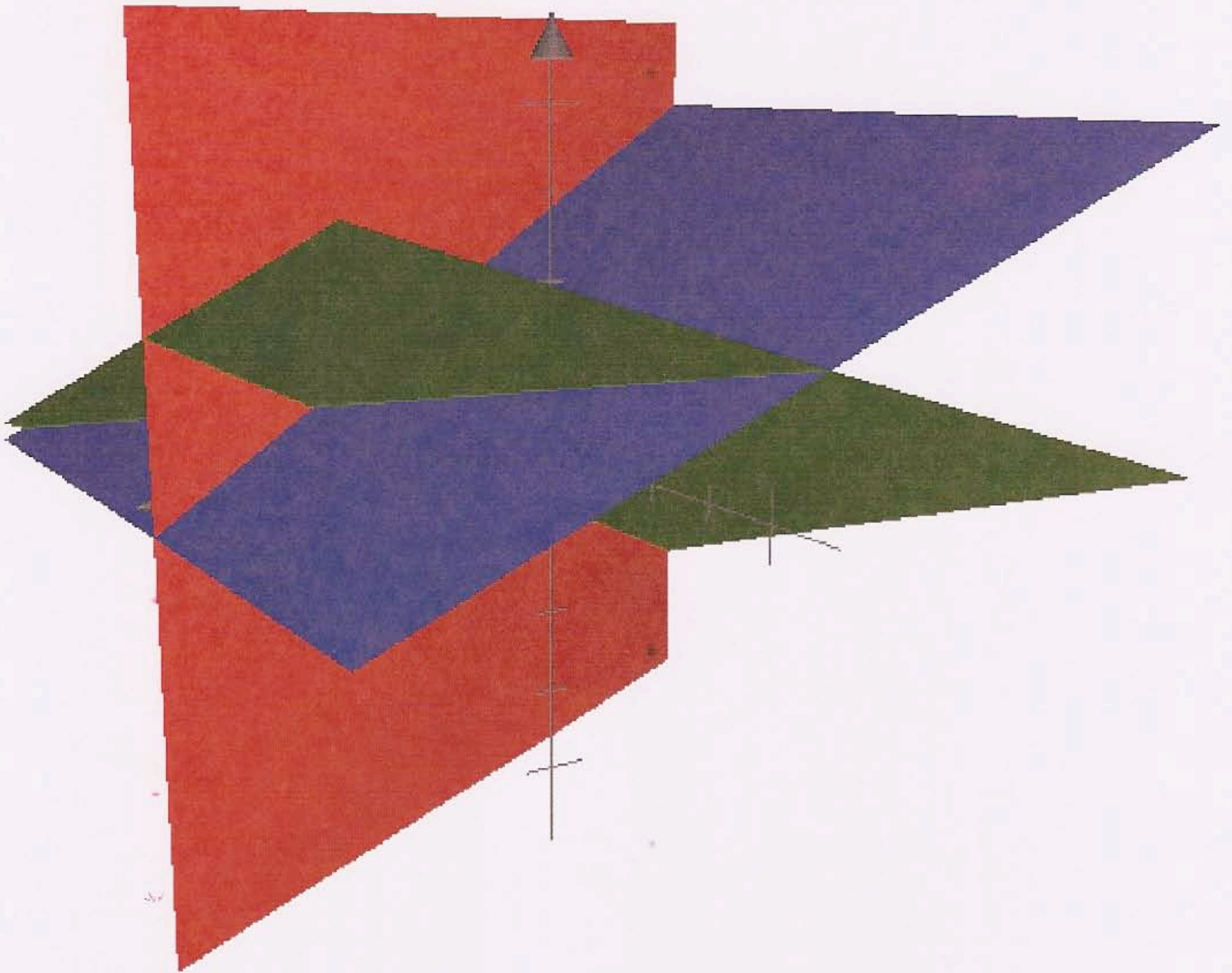
# Exercise 1



$$\begin{aligned}x_1 - 3x_2 &= 5 \\ -x_1 + x_2 + 5x_3 &= 2 \\ x_2 + x_3 &= 0\end{aligned}$$



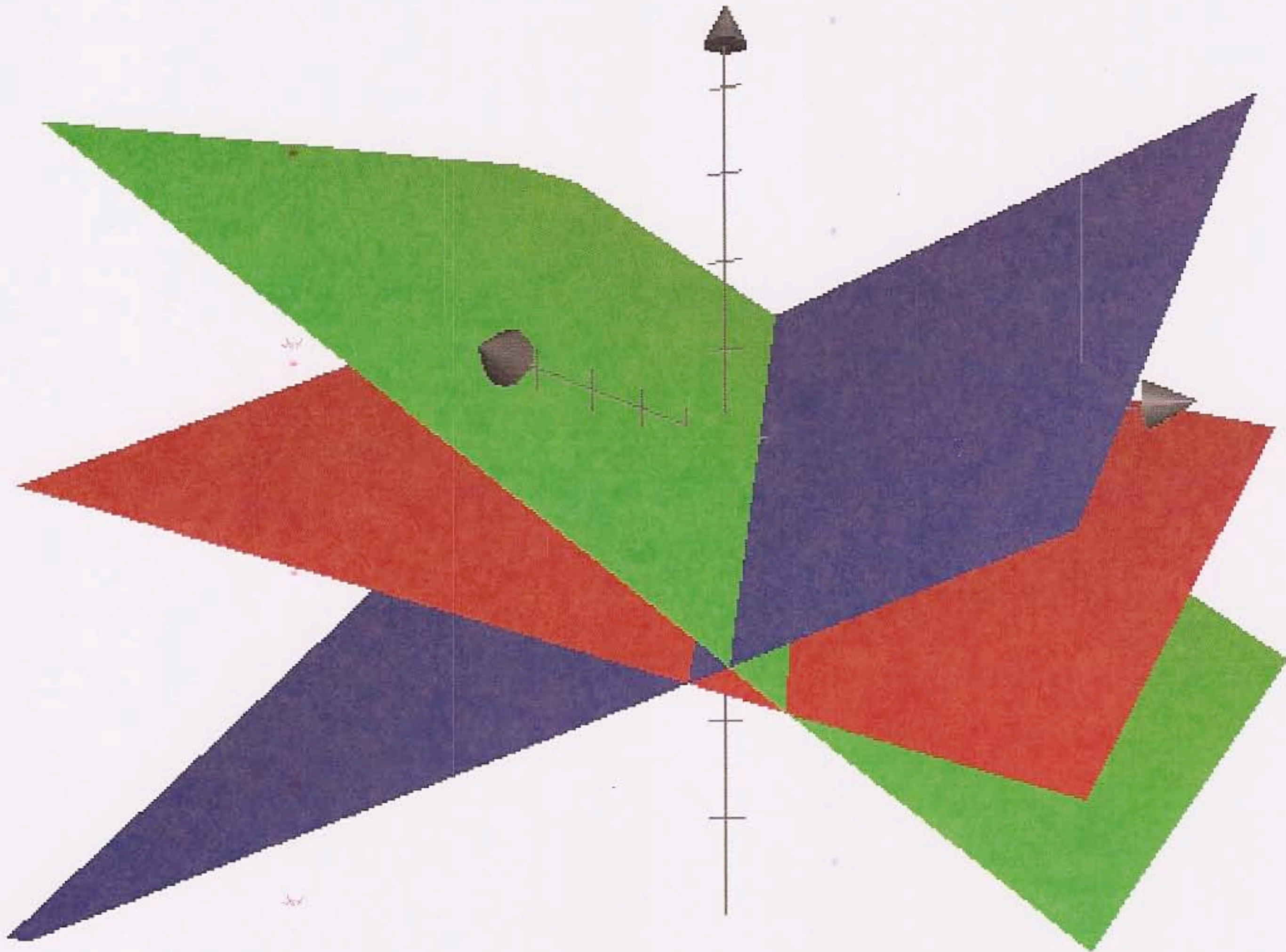
# Exercise 1



$$\begin{aligned}x_1 - 3x_2 &= 5 \\ -x_1 + x_2 + 5x_3 &= 2 \\ x_2 + x_3 &= 0\end{aligned}$$



Example 3.



$$x_1 + 2x_2 + x_3 = 4$$

$$x_2 - x_3 = 1$$

$$x_1 + 3x_2 = 0$$