Step-1

Given that the three planes can fail to have an intersection point, when two planes are parallel. And the system is singular if row 3 of A is a _____ of the first two rows.

We have to fill this blank and we have to find a third equation that canâ€™t be solved if $x+y+z=0, x-2y-z=1$

Step-2

The system is singular if row 3 is a combination of row1 and row2.

From the end view the three planes form a triangle.

This happens if rows 1 +rows 2 = rows 3 on the left hand side but not right hand side.

For example:

$$\begin{aligned} x+y+z &= 0 \\ x-2y-z &= 1 \\ 2x-y &= 9 \end{aligned}$$

Here no two planes are parallel but still no solution.