Step-1

(a)

Use the Cramerâ€™s rule to solve for *y*:

$$ax + by = 1$$
$$cx + dy = 0$$

Calculate the determinant:

$$\det A = \begin{vmatrix} a & b \\ c & d \end{vmatrix}$$
$$= ad - bc$$

Step-2

To calculate only y therefore, calculate determinant of only matrix B_2:

$$|B_2| = \begin{vmatrix} a & 1 \\ c & 0 \end{vmatrix}$$
$$= c$$

Use Cramerâ€™s rule ratio to determine *y*:

$$y = \frac{|B_2|}{\det A}$$
$$= \frac{c}{ad - bc}$$

Hence, $\boxed{y = \frac{c}{ad - bc}}$

Step-3

(b)

Use the Cramerâ€™s rule to solve for *y*:

$$ax + by + cz = 1$$
$$dx + ey - fz = 0$$
$$gx + hy + iz = 0$$

From the question 3 by 3 determinant is *D*, hence,

$$\det A = \begin{vmatrix} a & b & c \\ d & e & -f \\ g & h & i \end{vmatrix}$$
$$= D$$

Step-4

As we have to calculate only y therefore, calculate determinant of only matrix B_2:

$$|B_2| = \begin{vmatrix} a & 1 & c \\ d & 0 & -f \\ g & 0 & i \end{vmatrix}$$
$$= a \cdot (0-0) + d \cdot (0-i) + g \cdot (0+f)$$
$$= fg - id$$

Use Cramerâ€™s rule ratio to determine y:

$$y = \frac{|B_2|}{\det A}$$
$$= \frac{fg - id}{D}$$

Hence, $\boxed{y = \frac{fg - id}{D}}$