Step-1

For the sake of convenience, we exchange the first column with the third column.

$$\begin{bmatrix} -1 & 2 & | & 1 & 0 & | & 6 \\ 0 & 1 & | & 2 & -1 & | & 6 \\ - & - & - & - & - & - & - \\ 0 & -1 & | & 1 & 0 & | & 0 \end{bmatrix}$$

Step-2

Multiply the first row by â€“1.

$$\begin{bmatrix} 1 & -2 & | & -1 & 0 & | & -6 \\ 0 & 1 & | & 2 & -1 & | & 6 \\ - & - & - & - & - & - & - \\ 0 & -1 & | & 1 & 0 & | & 0 \end{bmatrix}$$

Step-3

Multiply the second row by 2 and it to the first row. This gives:

$$\begin{bmatrix} 1 & 0 & | & 3 & -2 & | & 6 \\ 0 & 1 & | & 2 & -1 & | & 6 \\ - & - & - & - & - & - & - \\ 0 & -1 & | & 1 & 0 & | & 0 \end{bmatrix}$$

Step-4

The fully reduced tableau R is given by,

$$R = \begin{bmatrix} I & | & B^{-1}N & | & B^{-1}b \\ - & - & - & - & - \\ C_B - C_B I & | & C_N - C_B B^{-1}N & | & -C_B B^{-1}b \end{bmatrix}$$

Therefore,

$$R = \begin{bmatrix} 1 & 0 & | & 3 & -2 & | & 6 \\ 0 & 1 & | & 2 & -1 & | & 6 \\ - & - & - & - & - & - & - \\ 0 & 0 & | & 3 & -1 & | & -6 \end{bmatrix}$$

Step-5

We have $r = [3, -1]$. Since there is a negative sign in the fourth column, the fourth variable will enter the basis.

The fourth column is $\begin{bmatrix} -2 \\ -1 \end{bmatrix}$. The ratios are $\frac{-2}{6}$ and $\frac{-1}{6}$. Since, both ratios are negative, we will never meet another corner.