

Step-1

Given system is $2x - 4y = 6$

$$-x + 5y = 0$$

Given system can be written as

$$\begin{pmatrix} 2 & -4 & 6 \\ -1 & 5 & 0 \end{pmatrix}$$

Subtract $\frac{-1}{2}$ times the first row from the second row to get

$$\begin{pmatrix} 2 & -4 & 6 \\ 0 & 3 & 3 \end{pmatrix} \text{ which is an upper triangular system.}$$

Therefore the multiple is $\boxed{l = \frac{-1}{2}}$.

Step-2

The linear system of above is $2x - 4y = 6$

$$3y = 3$$

By back-substitution, we have $3y = 3$

$$\Rightarrow y = 1$$

And $2x - 4(1) = 6$

$$\Rightarrow x = 5$$

Hence the solution is $\boxed{(5, 1)}$

Step-3

If right hand side changes sign, then the system becomes

$$2x - 4y = -6$$

$$-x + 5y = 0$$

The system can be written as $\begin{pmatrix} 2 & -4 & -6 \\ -1 & 5 & 0 \end{pmatrix}$

Subtract $\frac{-1}{2}$ times the first row from the second row to get

$\begin{pmatrix} 2 & -4 & -6 \\ 0 & 3 & -3 \end{pmatrix}$ which is an upper triangular system.

Step-4

By back-substitution, we have $3y = -3$

$$\Rightarrow y = -1$$

And $2x - 4y = -6$

$$\Rightarrow 2x + 4 = -6$$

$$\Rightarrow x = -5$$

Hence the solution is $\boxed{(-5, -1)}$.

Hence if the right-hand side of the system changes sign, so does the solution.