① Compute the main determinant D of the coefficient matrix:

$$D = \det\begin{pmatrix} 2 & -5 \\ 5 & -13 \end{pmatrix} = 2\cdot(-13) - (-5)\cdot 5 = -26 - (-25) = -1$$

② Compute D_1 by replacing the first column with the right-hand side (a, b):

$$D_1 = \det\begin{pmatrix} a & -5 \\ b & -13 \end{pmatrix} = a\cdot(-13) - (-5)\cdot b = -13a + 5b$$

③ Compute D_2 by replacing second column with (a, b):

$$D_2 = \det\begin{pmatrix} 2 & a \\ 5 & b \end{pmatrix} = 2b - a\cdot 5 = 2b - 5a$$

④ Solve for x_1, x_2:

$$x_1 = \frac{D_1}{D} = \frac{-13a + 5b}{-1} = 13a - 5b$$

$$x_2 = \frac{D_2}{D} = \frac{2b - 5a}{-1} = 5a - 2b$$

Answer:

$x_1 = 13a + (-5)b$

$x_2 = 5a + (-2)b$