If the coordinate of a vector x with respect to basis $\{b1, b2\}$ are given as $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ as;

$\mathbf{x} = 2b_1 + 3b_2$

and $\{b_1, b_2\}$ are further expressed in terms of basis $\{c_1, c_2\}$ i.e.$b_1 = -3c_1 + 5c_2$ and $b_2 = 3c_1 - 4c_2$, then the change in coordinates of x from $\{b_1, b_2\}$ to $\{c_1, c_2\}$ are as follows;

$\mathbf{x} = 2b1 + 3b2 = 2\,(-3c1 + 5c2) + 3\,(3c1 - 4c2)$

$\mathbf{x} = 2\,(-3c_1 + 5c_2) + 3\,(3c_1 - 4c_2) = 3c_1 - 2c_2$

$\therefore$coordinate of $\mathbf{x}$ with respect to $\{c_1, c_2\} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$