The eigenvalues of $\begin{bmatrix} 4 & -6 \\ 3 & -5 \end{bmatrix}$ are $\lambda_1 = 1$ and $\lambda_2 = -2$. (You do not need to check this.)

Find the general solution to the differential equation

$$y' = \begin{bmatrix} 4 & -6 \\ 3 & -5 \end{bmatrix} y.$$