$\lambda_3 = 1$

$$\begin{pmatrix} 1-3 & -5 & -3 \\ 0 & 1-4 & -6 \\ 0 & 0 & 1-1 \end{pmatrix}\begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = 0 \Rightarrow \begin{cases} -2x_1 - 5x_2 - 3x_3 = 0 \\ -3x_2 - 6x_3 = 0 \\ 0 = 0 \end{cases} \Rightarrow x_3 = -\frac{1}{2}x_2$$

$$-2x_1 - 5x_2 - 3\left(-\frac{1}{2}x_2\right) = 0$$

$$x_2 = -\frac{4}{7}x_1 \; ; \; x_3 = -\frac{1}{2}\left(-\frac{4}{7}x_1\right) = \frac{2}{7}x_1$$

$$X = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = t\begin{pmatrix} 1 \\ -\frac{4}{7} \\ \frac{2}{7} \end{pmatrix}$$