EX.2.3.6, Sauer3

Please do this problem using Colab. Do not do this by hand.

Find the relative forward and backward errors and error magnification factor for the following approximate solutions of the system

$$\begin{cases} x_1 + 2\,x_2 = 3 \\ 2\,x_1 + 4.01\,x_2 = 6.01 \end{cases}$$

(a) $\begin{pmatrix} -10 \\ 6 \end{pmatrix}$ (b) $\begin{pmatrix} -100 \\ 52 \end{pmatrix}$ (c) $\begin{pmatrix} -600 \\ 301 \end{pmatrix}$ (d) $\begin{pmatrix} -599 \\ 301 \end{pmatrix}$

(e) What is the condition number of the coefficient matrix?