BONUS 2 – ŘEŠENÍ (KOMBI)

① a)
$$\left(\begin{array}{ccc|c} \textcircled{1} & 1 & 2 & 4 \\ 1 & 3 & 1 & 5 \\ 1 & 5 & -1 & 3 \end{array}\right) \begin{matrix} \\ \cdot(-1) \\ \\ + \end{matrix} \sim \left(\begin{array}{ccc|c} 1 & 1 & 2 & 4 \\ 0 & \textcircled{2} & -1 & 1 \\ 0 & 4 & -3 & -1 \end{array}\right) \begin{matrix} \\ \cdot(-2) \\ + \end{matrix} \sim \left(\begin{array}{ccc|c} 1 & 1 & 2 & 4 \\ 0 & 2 & -1 & 1 \\ 0 & 0 & -1 & -3 \end{array}\right)$$

$x_3 = 3$ | $2x_2 - 3 = 1$ | $x_1 + 2 + 6 = 4$

$2x_2 = 4$

$x_2 = 2$

$x_1 = -4$

b)
$$\begin{pmatrix} 1 & 1 & 2 \\ 1 & 3 & 1 \\ 1 & 5 & -1 \end{pmatrix} \cdot \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{pmatrix} 4 \\ 5 \\ 3 \end{pmatrix}$$

② $$\begin{vmatrix} 2-\lambda & 3 \\ 1 & 4-\lambda \end{vmatrix} = (2-\lambda)(4-\lambda) - 3 = \lambda^2 - 6\lambda + 5 = (\lambda - 1)(\lambda - 5)$$

$\lambda_1 = 1$ | $\lambda_2 = 5$

③ a) $e^x = 11 \Rightarrow x = \ln 11$

b) $\ln x = 6 \Rightarrow x = e^6$