Problem 1

Solve the following: $Y' = \begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix} Y + \begin{pmatrix} 1 \\ x \end{pmatrix}$.

Problem 2

Solve the following: $Y' = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix} Y + \begin{pmatrix} e^x \\ x \end{pmatrix}$.

Problem 3