Full Name: ID:

Section and Serial number:

Question 1 Solve the following systems of linear DEs:

$$1) \quad X' = AX \quad \text{where} \quad A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}.$$

2) $X' = BX$ where $B = \begin{pmatrix} 3 & -9 \\ 4 & -3 \end{pmatrix}$

3) $X' = DX$ where $D = \begin{bmatrix} 0 & 1 & 2 \\ -5 & -3 & -7 \\ 1 & 0 & 0 \end{bmatrix}$.