King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 260 (141) Sec 02 - Quiz 4

Name: ID: Serial No.:

1. Find the general solution of $X' = \begin{bmatrix} 3 & 0 & 0 \\ -1 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix} X$

2. Solve $Y' = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 1 & -4 \\ -1 & 4 & 1 \end{bmatrix} Y$.

3. Solve $X' = \begin{bmatrix} 4 & 1 \\ -1 & 2 \end{bmatrix} X$.

4. Consider the linear system $X' = \begin{bmatrix} 4 & 1 \\ -2 & 1 \end{bmatrix} X$

   (a) Verify that $x_1 = \begin{bmatrix} 1 \\ -1 \end{bmatrix} e^{3t}$ and $x_2 = \begin{bmatrix} 1 \\ -2 \end{bmatrix} e^{2t}$ are solutions of the given system.

   (b) Find the general solution

   (c) Use part(b) to solve the IVP, where $x(0) = \begin{bmatrix} 2 \\ -3 \end{bmatrix}$