King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 260 (111) - Quiz 4

Name: ID: Serial No.:

1. Given $A = \begin{bmatrix} 1 & 1 \\ -2 & 4 \end{bmatrix}$

   (a) Find the eigenvalues and the eigenvectors of A.

   (b) Is A diagonalizable? If so; find A^{100}.

   (c) Find the general solution of the system of DE: $Y' = AY$.

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

   Hint: $p(\lambda) = \lambda(\lambda - 1)^2$ is the characteristic polynomial of A.