

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS**  
**DEPARTMENT OF MATHEMATICS AND STATISTICS**  
**MATH 260 - MAKE UP**

Name:

Student ID #:

**Question 1.** Transform the differential equation  $t^2x'' + \sin(t)x' + \cos(t)x = \ln(t^4 + 1)$  into an equivalent system of first order differential equations.

**Question 2.** Solve the initial value problem

$$X'(t) = \begin{bmatrix} -1 & 2 \\ -2 & -1 \end{bmatrix} X(t), \quad X(0) = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

**Your Solution.**