Quiz 13

Name : _____

SID : _____

1. Find a general solution to the homogeneous equation:

$$\left(\frac{d}{dt} - 2\right)^2 \left(\frac{d^2}{dt^2} - 2\frac{d}{dt} + 2\right)^2 y = 0$$

2. Let

$$\mathbf{x}_1 = \begin{bmatrix} 2e^{4t} \\ e^{4t} \end{bmatrix}, \quad \mathbf{x}_2 = \begin{bmatrix} e^{-t} \\ 3e^{-t} \end{bmatrix}.$$

Determine if $\{\mathbf{x}_1, \mathbf{x}_2\}$ form a fundamental solution set of the system:

$$\mathbf{x}' = \begin{bmatrix} 5 & -2 \\ 3 & -2 \end{bmatrix} \mathbf{x}.$$