KFUPM/ Department of Mathematics & Statistics/ 172/ MATH 260/ Quiz 4

Name: **ID #:** **Serial #:**

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1. [10pts] Find a fundamental matrix for the system $X' = AX$ where $A = \begin{bmatrix} 2 & -1 \\ -4 & 2 \end{bmatrix}$.

2. [10pts] Given that $\Phi(t) = \begin{bmatrix} 1 & 1+t \\ 1 & t \end{bmatrix}$ is a fundamental matrix for the homogeneous system $X' = AX$, find a particular solution of the nonhomogeneous system $X' = AX + \begin{bmatrix} 1/t \\ 1/t \end{bmatrix}$, where $A = \begin{bmatrix} 1 & -1 \\ 1 & -1 \end{bmatrix}$ (and $t > 0$).