KFUPM/ Department of Mathematics & Statistics/ 152/ MATH 202-12/ Quiz 3/

Name:

Serial #:

1. [10pts] Let  $A = \begin{pmatrix} 1 & -4 \\ 4 & 9 \end{pmatrix}$ . Verify that  $X_1 = \begin{pmatrix} -4 \\ 4 \end{pmatrix} e^{5t}$  and  $X_2 = \begin{pmatrix} 1 - 4t \\ 4t \end{pmatrix} e^{5t}$  form a fundamental set of solutions for the system X' = AX.

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2. [10pts] Solve the system  $X' = \begin{pmatrix} 1 & 2 \\ -2 & 1 \end{pmatrix} X$