Ma 2 practical - Written Homework #9
Due Monday, December 7, 2015 before 4pm

Name (Print):

Please write down the question number at the beginning of your solution. You can use this sheet as a cover.

1. (10 points) Section 7.5
Solve the initial value problem:
\[
\frac{d}{dt}X = \begin{bmatrix} -2 & 1 \\ -5 & 4 \end{bmatrix} X, \quad X(0) = \begin{bmatrix} 1 \\ 3 \end{bmatrix}.
\] (1)

2. (10 points) Section 7.6
Express the general solution of the given system of equations in terms of real valued functions
\[
\frac{d}{dt}X = \begin{bmatrix} -1 & -4 \\ 1 & -1 \end{bmatrix} X.
\] (2)

3. (10 points) Section 7.8
Find the general solution of the system of equations
\[
\frac{d}{dt}X = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix} X.
\] (3)

4. (10 points) Section 7.8
Find the solution to the initial value problem
\[
\frac{d}{dt}X = \begin{bmatrix} 3 & 9 \\ -1 & -3 \end{bmatrix} X, \quad X(0) = \begin{bmatrix} 2 \\ 4 \end{bmatrix}.
\] (4)

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