Worksheet 9D

For each matrix A, find a general solution to the differential equation $\vec{x}' = A\vec{x}$,

then find and graph the specific solution given the initial conditions $\vec{x}(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$.

Choose at least one problem and graph *many* of its solutions (i.e. with many values for c_1 and c_2).

1) $A = \begin{bmatrix} 3 & -4 \\ 1 & -1 \end{bmatrix}$

2) $A = \begin{bmatrix} 4 & -2 \\ 8 & -4 \end{bmatrix}$

3) $A = \begin{bmatrix} -3 & 5/2 \\ -5/2 & 2 \end{bmatrix}$

4) $A = \begin{bmatrix} 1 & -4 \\ 4 & -7 \end{bmatrix}$

5) $A = \begin{bmatrix} 3 & 9 \\ -1 & -3 \end{bmatrix}$

6) $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 1 & -1 \\ 0 & -1 & 1 \end{bmatrix}$