

2. [16 points] Find real-valued solutions to each of the following, as indicated. (*Note that minimal partial credit will be given on this problem.*)

a. [8 points] The general solution to the system $x_1' = 2x_1 + 3x_2$, $x_2' = x_1 + 4x_2$

b. [8 points] The solution to $\begin{pmatrix} x_1 \\ x_2 \end{pmatrix}' = \begin{pmatrix} 1 & 2 \\ -1 & -1 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$, with $\begin{pmatrix} x_1(0) \\ x_2(0) \end{pmatrix} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}$.