

Section 7.5

Exercise 1. Find the eigenvalues and eigenvectors of

$$A = \begin{pmatrix} 2 & -3 \\ 1 & -2 \end{pmatrix}$$

Find the general solution of

$$X'(t) = AX$$

Exercise 2. Find the initial solution to

$$X'(t) = \begin{pmatrix} 5 & -1 \\ 3 & 1 \end{pmatrix} X(t), \quad X(0) = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

Exercise 3. Find the general solution to

$$X'(t) = AX(t) = \begin{pmatrix} 1 & 2 & -1 \\ 1 & 0 & 1 \\ 4 & -4 & 5 \end{pmatrix} X(t).$$