Quiz 6

1. Solve

$$\boldsymbol{x}' = \begin{bmatrix} -1/2 & 1\\ -1 & -1/2 \end{bmatrix} \boldsymbol{x}$$

2. The system

$$\boldsymbol{x}' = \begin{bmatrix} 1 & 1 \\ 4 & 1 \end{bmatrix} \boldsymbol{x}$$

Has eigenvalues 3 and -1 and corresponding eigenvectors $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ -2 \end{bmatrix}$. Find the fundamental matrix $\Phi(t)$ such that $\Phi(0) = I$