

Name:

1. Find the fundamental matrix $\Phi(t)$ for the following system satisfying $\Phi(0) = I$.

$$\mathbf{x}' = \begin{pmatrix} 1 & -5 \\ -5 & 1 \end{pmatrix} \mathbf{x}$$

2. Solve the following initial value problem.

$$\mathbf{x}'(t) = \begin{pmatrix} -3/2 & 1/2 \\ -1/2 & -1/2 \end{pmatrix} \mathbf{x}(t)$$

$$\mathbf{x}(0) = \begin{pmatrix} 2 \\ -2 \end{pmatrix}$$