1. Rewrite the following differential equation as a system of first-order linear differential equations.
\[
\frac{d^4}{dx^4}y - 3\frac{d^3}{dx^3}y + 14\frac{d^2}{dx^2}y - 2\frac{d}{dx}y + y = 0.
\]

2. (10 points) Solve the following initial-value problem:
\[
\begin{bmatrix} 1 & 2 \\ -3 & 6 \end{bmatrix} \begin{bmatrix} x(t) \\ \dot{x}(t) \end{bmatrix}, \quad x(0) = \begin{bmatrix} 3 \\ 2 \end{bmatrix}.
\]