
NAME:.........................................................

This is an individual assignment. Justify each one of your answers and hand in a clear and well written report to me.

Linear Systems

Given the following system:
\[
\frac{dx}{dt} = 2x + 3y \\
\frac{dy}{dt} = -y - 3x
\]

1. Draw the phase portrait.

2. Find the general solution.

3. Solve the initial value problem for \((x(0), y(0)) = (0, 1)\).

4. Graph the particular solution in the phase plane \((xy\text{-plane})\) and in the \(xt\text{- and yt\text{-planes}}\).

5. What is the natural period of the oscillations?