

# Trajectories

Another way we can analyze these first order systems is by looking at the trajectories of the solutions.

**What does this resemble?**

We had talked about trajectories before for a different type of equation.

## Hamiltonian System

The definition we have here is that of a Hamiltonian System.

**Example.** Determine that the system

$$\frac{dx}{dt} = 2y + x \quad \frac{dy}{dt} = -8x - y$$

is Hamiltonian find the trajectories of the system.