- The motion of a certain pendulum system is given by

$$x' = y, \quad y' = -9\sin x - y/5$$

where $x = \theta$ and $y = d\theta/dt$.

- Note that $\omega^2 = 9$, and thus the damping coefficient, $\gamma = 1/5$, is relatively small. It follows that $\gamma^2 - 4\omega^2 < 0$ here.
- The phase portrait for this system is given below.