M 327J - Differential Equations with Linear Algebra

November 14, 2022

Quiz 7

1. **[5 points]** Find the orbits of the system

$$\begin{aligned} \dot{x} &= y(x^2 - y^2) \\ \dot{y} &= x(y^2 - x^2) \end{aligned}$$

2. **[5 points]** Solve the problem

$$\begin{cases} \frac{\partial}{\partial t} u = 4 \frac{\partial^2}{\partial x^2} u \\ u(x, 0) = 2 \sin\left(\frac{5\pi x}{2}\right) \\ u(0, t) = u(2, t) = 0 \end{cases}$$