

Math 325: Differential Equations

Name: _____

Quiz 5 Nov. 22, 1996

Consider the non-linear system

$$\begin{aligned}\frac{dx}{dt} &= x(3 - x - y) \\ \frac{dy}{dt} &= y(4 - 2y - x)\end{aligned}$$

- a) Find all critical points of this system.
- b) Classify each critical point by type and stability.
- c) Describe what happens to the solution that passes through the point $(1, 1)$ in the phase plane as $t \rightarrow \infty$.