

Quiz 12, Math 246, Professor David Levermore
Tuesday, 8 May 2018

Your Name:

Discussion Instructor (circle one):	Kilian Cooley	Corry Bedwell	Thien Ngo
Discussion Time (circle one):	8:00	9:00	10:00
			11:00

No books, notes, calculators, or any electronic devices.

Show your reasoning for full credit. Good luck!

(1) [5] Consider the system

$$x' = 2x + y, \quad y' = -x - 2y - x^2.$$

- (a) [2] Find all of its stationary points.
- (b) [3] Find a nonconstant function $H(x, y)$ such that every orbit of this system satisfies $H(x, y) = c$ for some constant c .

(2) [5] Consider the system

$$u' = 3u - v, \quad v' = 2v - 3u^2.$$

Its stationary points are $(0, 0)$ and $(2, 6)$. Classify the type and stability of each of these stationary points. (You do not have to sketch anything.)