

**Quiz 11, Math 246, Professor David Levermore**  
**Tuesday, 3 December 2019**

**Your Name:**

**Discussion Instructor (circle one):**      Sam Potter      Nathan Yu      David Russell  
**Discussion Time (circle one):**      9:00      11:00      12:00

**No books, notes, calculators, or any electronic devices.**  
**Show your reasoning for full credit. Good luck!**

(1) [5] Consider the system

$$x' = -4x + y, \quad y' = 5x - 5x^2.$$

Its stationary points are  $(0, 0)$  and  $(1, 4)$ . Classify the type and stability of each of these stationary points. (You do not have to sketch anything.)

(2) [5] Consider the planar system

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

Its stationary points are  $(0, 0)$  and  $(2, 4)$ . Classify the type and stability of each of these stationary points. (You do not have to sketch anything.)