Spring 2017 MATH 134: Homework 8, due June 12th at final exam

Note: At least one of the homework problems, including the suggested exercises, will appear on each exam.

- 1-2. Strogatz 8.1.6, 8.1.8.
- 3. Strogatz 8.2.8(a-d).
- 4. [Gronwall's inequality exercise] Let us consider the system

$$\dot{x} = -x(1+x^2) + y, \quad \dot{y} = -x - y(1+x^2).$$

Show that $(x^2+y^2)(t) \le e^{-2t}(x^2+y^2)(0)$. It follows that any trajectory in the system converges to the origin exponentially fast.

Other suggested exercises not to be turned in: Strogatz 8.2.9 (a-c), 8.2.12