

Homework 13

Math 147 (section 501–502–503), Spring 2015

This homework is due on Wednesday, April 22.

0. Re-read the part of Section 5.1 pertaining to the Mean-Value Theorem and Rolle's Theorem. Read Sections 5.8 and 6.1. After reading these sections, you should be able to answer the following questions (which are *not* to be turned in).

- What is an *initial-value problem*?
- Is $2 \sin x$ an antiderivative of $\sin^2 x$?
- Is $\cos x + \ln 5$ an antiderivative of $-\sin x$?

1. For the following recursions, determine all fixed points, whether they are stable, and, if so, whether they are approached with or without oscillations:

(a)

$$a_{n+1} = |a_n|$$

(b)

$$a_{n+1} = \begin{cases} -0.2a_n & \text{if } a_n \leq 0 \\ \sqrt{a_n} & \text{if } a_n > 0 \end{cases}$$

2. Section 5.1 # 38, 42, 48, 54
3. Section 5.6 # 12, 16, 18, 20, 24
4. Section 5.8 # 10, 24, 26, 70
5. (These problems are *not* to be turned in!)
 - (a) Section 5.1 # 32
 - (b) Section 5.6 # 13
 - (c) Section 5.8 # 5, 9, 31, 35, 67