

## MATHEMATICS 201-BNJ-05

Topics in Mathematics

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Winter 2009

# Assignment #4

Part I of this assignment is due *Tuesday April 21, 2009* at the beginning of the class. Complete solutions with exact answers are expected.

For questions involving Maple, a print-out of your work is expected, where your name is written in the Worksheet, each question is clearly labeled, and the answers are clearly presented. Also, you must copy your file in my “TEST” subfolder (W:\Tests\mhuard\Topics\Assignment 4), where your name should be included in the name of the file (for example: Assignment 4 – Your Name).

## PART I

Do the following questions from the book.

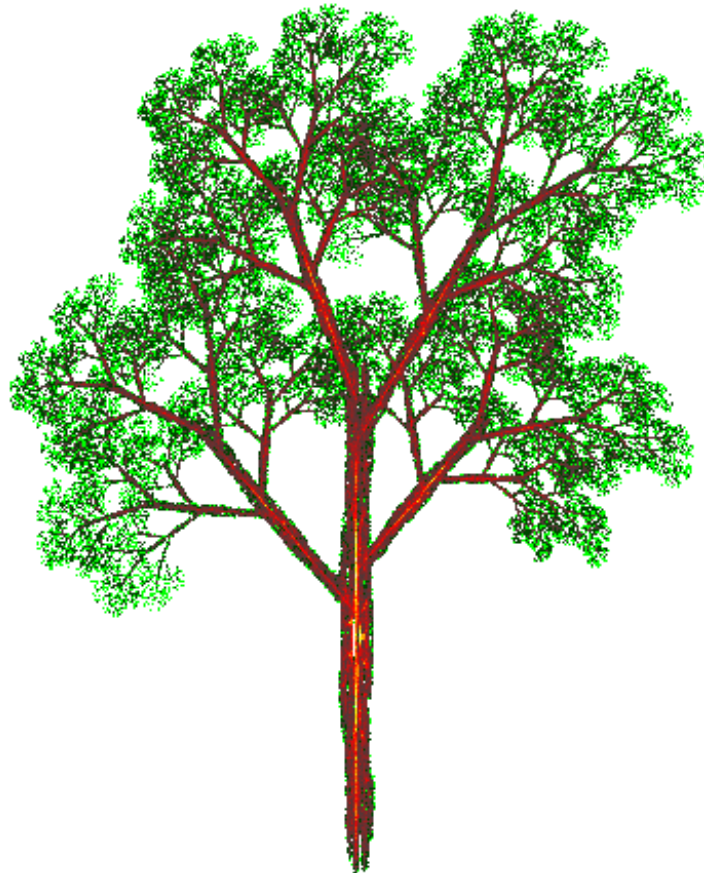
- 7.1.14 page 176 (4 points)
- 7.2.20 page 183 (4 points)
- 7.3.42 page 191 (6 points)
- 7.4.8 page 199 (3 points)
- 7.4.18 page 199 + 22 (for #18) (4 points)
- 8.1.44 page 208 (2 points)
- 8.1.52 page 208 (2 points)
- 8.1.62 page 209 (3 points)
- 8.2.12 page 213 (3 points)
- 9.1.18 page 223 (4 points)
- 9.1.26 page 224 (2 points)
- 9.1.32 page 224 (3 points)

## PART II

Part II of this assignment is due *Friday May 1, 2009* at the beginning of the class.

**Question 1** (10 points)

Consider the following tree, which can be seen as a fractal.



With the help of Maple,

- Find all of the defining functions (all are affine) and give a recursive definition to the fractal.
- Find the probabilities associated with each of the defining functions.
- Sketch an approximation to the fractal.