MATH 248 FALL 2017 – LABORATORY ASSIGNMENT 1 – Sochacki
DUE: Tuesday September 26, 2017
POINTS: 50

You are to write up the following neatly on 8.5 x 11 inch paper.

1. Convert the following base two numbers to base ten. (a) 101010101.010101010101
(b) 111011101.11011011011011011001 (10 points)

2. Convert the following two rational numbers to decimal numbers. Give the error and
relative error in approximating these rational numbers with the number of digits given
using both rounding and chopping. Give the base two equivalents of these numbers. Give
the error and relative error in approximating these base two numbers with the number of
digits given using both rounding and chopping (all in base 2).
(a) 3/13, 9, 6 (b) 27/56, 8, 5 (10 points)

3. You are to write matlab scripts that are well commented that do the following
(a) Ask for a base ten number in the form $a_k a_{k-1}...a_2 a_1$ and convert it to base two.

(b) Ask for a base two number in the form $a_k a_{k-1}...a_2 a_1$ and convert it to base ten.

(c) Ask for a base ten number in the form $a_k a_{k-1}...a_2 a_1.d_{-1} d_{-2}...d_{-m}$ and convert it to base
two.

(d) Ask for a base two number in the form $a_k a_{k-1}...a_2 a_1.d_{-1} d_{-2}...d_{-m}$ and convert it to base
ten. (26 points)

Your matlab code should have variable names that are descriptive. Your coding should be
top down and efficient. Your input and output should be well labeled with easy to read
instructions. Your turn in should be neat and professional. (4 points)