

# Homework 1, Math 451, Spring 2013

due Wednesday, January 23rd

This home covers material from Sections 1.2, 1.3 of Mathews and Fink.

1. Recall from class that an Egyptian fraction is a sum of unit fractions of one half or less. One of the drawbacks of this notation is that this representation of a number is not unique.
  - (a) Calculation  $(1/4 + 1/24) - (1/6 + 1/8)$ .
  - (b) Find two different Egyptian fractions equal to  $7/24$ 's.
2. Find the standard binary representation of the following integers.
  - (a) 740
  - (b) 361
3. Find the exact binary-fractional representations of the following rational numbers.
  - (a)  $3/8$
  - (b)  $6/5$
4. Find the rational number represented by the repeating binary fractional form for
  - (a)  $0.\overline{10110}_{two}$
  - (b)  $0.\overline{01100}_{two}$
5. Which 32 floating point number is encoded by the following hexadecimal numbers (base on the IEEE 754 single-precision binary floating-point format discussed in class)?
  - (a)  $425C\ 0000_{hex}$
  - (b)  $412A\ AAAA_{hex}$
  - (c)  $B863\ 8E39_{hex}$

Also, please do Problems 4 and 5, Section 1.3 of Matthews and Fink.