# Homework 11

Math 302 (section 501), Fall 2016

This homework is due on Thursday, November 10.

0. *(This problem is not to be turned in.)*

   (a) Read Sections 8.3 and 6.1

   (b) (Practice Problems) Section 8.3 # 14–17, 19

   (c) (Practice Problems) Section 6.1 # 3, 4, 7, 10–14, 41

1. Section 8.3 # 11, 18

2. Section 6.1 # 8, 18, 22, 33

3. (a) Write down the recurrence relation (of a sequence $\{a_n\}$) whose characteristic equation is $r^3 - 2r + 1 = 0$.

   (b) Write down a recurrence satisfied by the sequence $\{a_n\}$ given by the formula $a_n = n!$. Is the recurrence you wrote down linear? If so, homogeneous or non-homogeneous?

   (c) Write down a recurrence satisfied by the sequence $\{a_n\}$ given by the formula $a_n = 6 \cdot (-3)^n$. Is the recurrence you wrote down linear? If so, homogeneous or non-homogeneous?

   (d) Write down a recurrence satisfied by the sequence $\{a_n\}$ given by the formula $a_n = 5^n - 3 \cdot 2^n$. Is the recurrence you wrote down linear? If so, homogeneous or non-homogeneous?

4. A (six-sided) die is rolled 4 times. How many possible outcomes involve a "1" being rolled at least twice (for example: 1,5,3,1)?

5. A store sells shirts in three colors (navy, maroon, and grey), two styles (long-sleeved and short-sleeved), three sizes (XS, S, M, L), and three styles (regular, petite, tall) – except that "petite" is not available in size L, and "tall, size XS" is not available in grey. How many different types of shirts are there?