WEEKLY ASSIGNMENTS
SETS AND LOGIC

Week 1: Read Introduction and Sections 1.1-1.3. (Whenever you are assigned to read a section of the book in this class, I am also expecting you to read and think about all the exercises at the end of that section.)

Week 2: Read Sections 1.3-1.5. Do problems 1.3: # 2, 8; 1.4: # 2, 9; 1.5: # 3, 5.

Week 3: Read Sections 2.1-2.2.

Week 4: Read Sections 3.1-3.2. Do problems 2.1 # 3b; 2.2 # 2c; 3.1 # 3, 8, 15; 3.2 # 2, 4, 12.

Week 5: Read Section 3.3, Exam 1.

Week 6: Read Sections 3.4-3.7. Do problems 3.4 # 3, 11, 26b; 3.5 # 9, 12: 3.6 # 7, 12.

Week 7: Read Sections 4.1-4.3. Do problems 4.1 # 5; 4.2 # 5, 9; 4.3 # 2, 6, 9.

Week 8: Read Section 4.4-4.6. Do problems 4.4 # 5, 13; 4.5 # 10, 19; 4.6 # 4a, 10. (Since there is no class on Friday, these problems are due on Monday 10/17.)

Week 9: Read Section 5.1, Exam 2.

Week 10: Read Chapter 5. Do problems 5.1 # 6, 5.2 # 11, 15, 5.3 # 4.

Week 11 Read Sections 6.1-6.3. Do problems 6.1 # 9a, 17a, 6.2 # 3, 6.

Week 12 Read Sections 6.4-6.5. Do problems 6.3 # 16, 19a, 6.4# 16. Also do the following problem:

A polynomial $p(x)$ with real coefficients is called *reducible* if there are polynomials $q_1(x)$ and $q_2(x)$ with real coefficients and with degree ≥ 1 such that $p(x) = q_1(x)q_2(x)$. A polynomial which is not reducible is called *irreducible*; for example, all polynomials of degree 1 are irreducible. Prove that every polynomial with real coefficients and degree ≥ 1 is equal to a product of irreducible polynomials.

(Since there is no class on Friday, these problems are due Wednesday, 11/16).

Week 14 Read Chapter 7. Do Problems 7.1 # 5, 15; 7.2# 1a, 3; 7.3# 3, 13. Also do the following problem:
Let $a, b \in \mathbb{R}$ with $a < b$. Prove the following:

(1) $|(0,1)| = |(a,b)|$.
(2) $|(a,b]| = |[0,\infty)|$.
(3) $|[0,\infty)| = |\mathbb{R}|$.

(These problems are due Monday, 12/5).