

## MTG 5316/4302 FALL 2018 ASSIGNMENT 9

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These problems are due in class on Friday, November 9, 2018.

You may discuss the problems with members of the class and with me. You may consult the textbook and other books. You may not read the papers of other students. The final writeup must be done by yourself in your own words. It must not be copied from any source. In this assignment each problem is worth 10 points. So, this assignment has twice the weight as the previous assignments.

**Problem 1.** State and prove the **Contraction Mapping Theorem**.

**Problem 2.** State and prove the **Baire Category Theorem**.