Problem Set 9

Due: Friday, April 15 at 11 AM in the Pset boxes outside room 4-174

- Problem 13.6.2 (the problem is asking whether 2 is prime in the ring of integers of $\mathbb{Q}(\sqrt{d})$, for $d < 0$ congruent to 1 mod 4; the answer depends on whether $d$ is congruent to either 1 or 5 mod 8). **Hint:** use the norm!

- Problem 13.7.4

- Problem 15.1.1 (don’t worry about this, but here is fun fact #1: this problem says that all finite-dimensional extensions of fields are fields, at least in the world of commutative integral domains; fun fact #2: if you drop the commutativity assumption, they you get funny counterexamples like quaternions and octonions).

- Problem 15.2.3