

PMATH 441/641: Algebraic Number Theory

We study rings of integers in algebraic number fields (extension fields of finite degree over \mathbb{Q}). We will cover the following material.

We will start with Fermat's Last theorem as the motivation. Next, we will study algebraic numbers and introduce the standard tools of algebraic number theory, including, trace, norm, discriminants, integral bases, and lattices. Then we introduce Dedekind domain and ideal class groups. We will prove the finiteness of the class number, and Dirichlet's Unit Theorem. We plan to cover extra topics if the time is permitted.