

## Math 565 - Spring 2019

### Homework 9

Due May 15th, 2019

*Legendre's Law of Quadratic Reciprocity is the most important general truth in the science of integral numbers which has been discovered since the time of Fermat. It has been called by Gauss 'the gem of the higher arithmetic,' and is equally remarkable whether we consider the simplicity of its enunciation, the difficulties which for a long time attended its demonstration, or the number and variety of the results which have been obtained by its means.*

— Henry Smith

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- (1) Problems 9-1.1 (b,c), 9-2.1, 9-3.5
- (2) Use quadratic reciprocity and the rules for Legendre symbols to determine the values of the Legendre Symbols  $\left(\frac{3}{53}\right)$  and  $\left(\frac{7}{79}\right)$