I. Project Title: Squaring the circle and other construction problems.

II. Supervisor

Dr. Sun Pak Kiu

III. Project Description: *Squaring the circle* is an ancient geometric problem. Using only straight-edge and compass, is it possible to construct a square with the same area as a given circle? There are other related problems such as doubling the cube and trisecting the angle.

In this project, we want to study the application of algebra on geometric problems.

Key Reference:

1. Nicholas D. Kazarinoff, *Ruler and the round*, Dover Publications Inc. 2003.

2. B.A. Sethuraman, *Rings, Fields, and Vector Spaces: An Introduction to Abstract Algebra via Geometric Constructibility*, Springer, 1997 edition, 1996.

3. John Stillwell, *Elements of Algebra: Geometry, Numbers, Equations*, Springer 2001.