

Shortlist of Problems for the Final Exam

The Math 2790 Final will take place on Monday, December 10th, from 12:00 to 3:00 PM in the Dalplex. There will be twelve problems on the final, with three problems in each of the following four sections:

Section A: Combinatorics and Probability

Section B: Euclidean Geometry

Section C: Number Theory

Section D: Heuristics (e.g. Pigeonhole Principle, Symmetry, Parity)

You will select **TWO** of the three problems in each section. Each question will be worth 10 marks. There will also be a brutal bonus question worth five marks. Thus, the final exam will be marked out of 80, with a maximum score of 85.

In preparation for your final exam, I *highly* recommend that you study this shortlist of problems, and understand the techniques and concepts involved. Also make sure you study the Original Problems sheet, because at least two “Original Problems” will be on your final exam. The problems on the exam will be very similar to these shortlisted problems:

1. Tour 2, Problem 3
2. Tour 2, Problem 6
3. Assignment 1 - Problem 4
4. Assignment 1 - Problem 7
5. Tour 8, Problem 6
6. Tour 11, Problem 4
7. Tour 11, Problem 6
8. Assignment 2, Problem 5
9. Tour 18, Problem 6 (correction: the problem should read “Prove the Pythagorean Theorem using *Ptolemy’s Theorem*”)
10. Assignment 3, Problem 4
11. Assignment 3, Problem 5
12. Assignment 3, Problem 7
13. Weekly Proof #11
14. Tour 22, Problem 4
15. Tour 22, Problem 7
16. Assignment 4, Problem 2