

# Math 124 - Exam 2 – Outline

1. Pre Exam I Material
2. Rotations - definition, notation, fixed points, fixed lines, center, order
3. The product of two reflections - parallel case, non-parallel case, finding fourth line to satisfy  $\sigma_a\sigma_b = \sigma_c\sigma_d$ , moving pairs of lines – parallel and concurrent case
4. Isometries
  - determined by values on three non-collinear points
  - that fix one point
  - that fix at least two points
  - as products of at most three reflections
5. The product of three reflections - parallel case, concurrent case, glide reflection case
6. Glide reflections - definition, axis, translation-reflection characterization, reflection-halfturn characterization, fixed points, fixed lines, order
7. Composition of isometries
8. The classification theorem for isometries on the plane – statement and applications
9. Even and odd isometries – definition, why the definition makes sense, applications
10. Similarities – definition, stretch, dilation, stretch reflection, stretch rotation, fixed points, fixed lines