

Test 3
MAT 310/Zandieh
December 11, 1998
30 points

Calculators allowed.
No notes allowed.

DO NOT WRITE ANSWERS ON THIS PAGE
Write your answers on the blank pages provided.

1. (6 points) State Euclid's Fifth Postulate (EFP) and Playfair's Parallel Postulate (PPP). Then prove **either** EFP implies PPP **or** PPP implies EFP. Do not prove both.
2. (4 points) Prove that the sum of the interior angles in a triangle on a plane is 180 degrees.
3. (7 points) Give an example of each of the 7 non-isomorphic strip patterns. List all the symmetries of each from the following list: identity (I), translation along the pattern (T), reflection across the pattern's center line (Ra), reflection perpendicular to the pattern (Rp), 180 degree rotation (Ro), glide reflection (G).
4. (4 points) Consider the composition of two reflections, where the two lines of reflection intersect. Is this composition the identity, a rotation, reflection, translation or glide reflection? How do you know? For whichever you chose describe how the given lines determine the line of reflection or translation or the center and angle of rotation.
5. (4 points) Consider the composition of three reflections, where the first two lines of reflection are parallel and the third is a transversal of both. Is this composition the identity, a rotation, reflection, translation or glide reflection? How do you know? For whichever you chose describe how the given lines determine the line of reflection or translation or the center and angle of rotation.
6. (5 points) [Everyone will get full credit for this problem as long as you answer the questions.] What was your experience with definition and proof before entering this class? Did anything about your understanding of definition and/or proof change as a result of taking this class? If so, what? If not, why not?