MAT360 Spring 2015
Practice Midterm I

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The actual midterm will consist of six problems. Test covers all material from Kiselev's book up to page 82. All types of problems discussed below will be on the test. If you are planning on getting a passing grade (C) you should be able

- to do problems from Section 1.

- to prove all the foundational theorems. It is expected that you will reproduce a proof from the book or will come up with an equivalent proof. "Proofs" that derive theorems from their corollaries will not be accepted.

- to do all the construction problems discussed in the book

- to do all the simple construction problems.

- to solve *all* the easy problems.

Those who what to get a grade better then C should try to solve all the problems given below. Mentioned abilities are , of course, necessary but not sufficient for passing the test. The actual test problems will not repeat problems of this practice exam. The problems are taken from Kiselev's *Geometry*.

1   Questions about the logical structure of Plane Geometry

1. What theorems are used in the proof of triangles equality tests?

2. What theorems are used in the proof of triangles inequality?

3. Do we need postulate of parallels to prove that exterior angle in a triangle is greater then interior angle not supplementary to it?

4. Do we need postulate of parallels to prove that if lines a, b and c satisfy $a \perp b$ and $b \perp c$ then $a || b$.

5. Do we use postulate of parallels to prove the formula for the sum of interior angles in a triangle.

6. What is a convex polygon?

7. Problem 45,46,50

2 Questions to prove a theorem from the book (up to page 82)

The following list of theorems are considered as central. The set of theorems whose proofs you are supposed to know includes but not limits to this list.

1. Foundational theorems §24 ,§35 ,§40 ,§42 ,§44 ,§48 ,§50 , §71 ,§73

2. Theorems about properties of geometric objects ,§51 ,§52 ,§55 ,§56 ,§81 ,§82 ,§83 ,§85 ,§86 ,§87 ,§91 ,§95 ,§97

3 Construction problems discussed in the book

Bring a compass and a ruler and be prepared to repeat construction of one of the problems discussed in the book §61-§69,§74,§96-§102

4 Construction problems

1. Simple problems 115-133,200-206 ,207-212

2. Harder problems 134-139

3. Hard problems 213-224

5   Problems on proofs

1. Easy 38-41,68,70-74,79,84,89(greater should be replaced by smaller),90,96,97,98,100,101,102,
   104,106,107,108,110,158,159,175,176,177,183,184,185,186,187,189,190,191,192,196

2. Harder 82,91,92,94(smaller should be replaced by greater)95,103,109,140,160,(178,179,180,181
   this is really one problem),188,193,194,195