MATH 8: ASSIGNMENT 19

 $\mathrm{MARCH}\ 3,\ 2018$

Homework

- **1.** Let A, B, C be on a circle centered at O such that $\angle AOB \cong \angle BOC \cong \angle COA$. Prove that $\triangle ABC$ is an equilateral triangle.
- **2.** Let A, B be points on circle ω such that the central angle $\angle AOB = x^{\circ}$. What is the angle between chord AB and the tangent line to the circle at A?
- **3.** Let M be a point outside the circle ω , and let l, l' be two lines through M. Denote the points where these lines intersect the circle by A, B (for l) and A', B' (for l').
- Prove that triangles MAB' and MBA' have the same angles. Is it true that they are congruent? 4. Let A, B, C, D be points on circle ω that form a quadrilateral. Prove that $m \angle ABC + m \angle ADC$. We call such a quadrilateral a cyclic quadrilateral: it is inscribed in a circle.
- **5.** Let $\triangle ABC$ be an isosceles triangle with base \overline{AC} whose perpendicular bisectors meet at point O. Prove that $\angle BOA \cong \angle BOC$.
- **6.** Given points A, B, what is the locus of points C such that $m \angle ACB = x^{\circ}$ for some number x?
- 7. Construct a right triangle, using a straightedge and compass, if you are given the length of its hypotenuse and the altitude from the right angle.