GEOMETRY
DR. PAUL L. BAILEY

Homework 0126
Tuesday, January 26, 2021

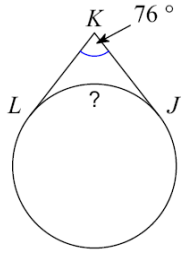
This homework is due Thursday, January 28, 2021. Write *neatly*. Put effort into your work.

Problem 1. Consider a circle with a point D outside of it. Let A and B be distinct points on the circle such that $\overline{DA}$ and $\overline{DB}$ are tangent to the circle. Show that $m\widehat{AB} + m\angle ADB = 180°$.

Problem 2. Demonstrate Problem 1 by solving these diagram puzzles.

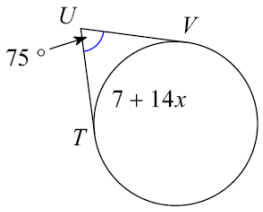
Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

1)



Solve for *x*. Assume that lines which appear tangent are tangent.

2)

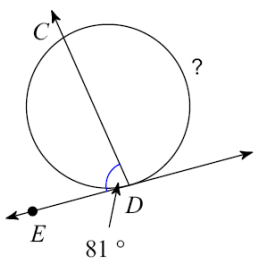


Problem 3. Consider a circle with chord $\overline{AB}$. Let $\overleftrightarrow{XY}$ be tangent to the circle at A, such that $\angle XAB$ is acute. Show that $m\angle XAB = \frac{1}{2}m\widehat{AB}$. (Hint: use Euclid Proposition III.32).

Problem 4. Demonstrate Problem 3 by solving these diagram puzzles.

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

3)



Solve for *x*. Assume that lines which appear tangent are tangent.

4)