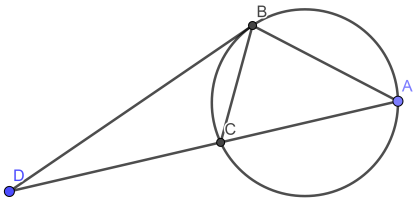
GEOMETRY
DR. PAUL L. BAILEY

Homework 0201
Monday, February 1, 2021

This homework is due Thursday, February 4, 2021. Put effort into your work. Write *neat* paragraph proofs, using words, sentences, and algebra. Do not "give up". One or more of these proofs will be on your next examination.

Problem 1. Consider a circle and a point D outside of it. Let B be on the circle such that $\overline{DB}$ is tangent to the circle. Draw a line segment starting at D, entering the circle at C, and ending on the other side of the circle at A. Join $\overline{BC}$ and $\overline{BA}$.

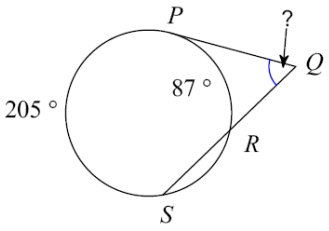


Show that $m\angle BDC = \frac{1}{2}(m\overset{\frown}{AB} - m\overset{\frown}{BC})$.

(Hint: HGeomx0126 Problem #2 regarding the measure of $\overset{\frown}{BC}$, and the Central Angle Theorem.)

Problem 2. Find ? is the first, and find x in the second.

1)



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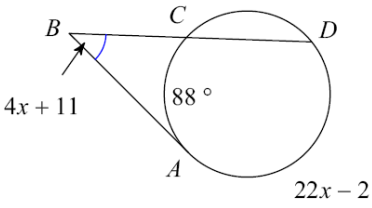
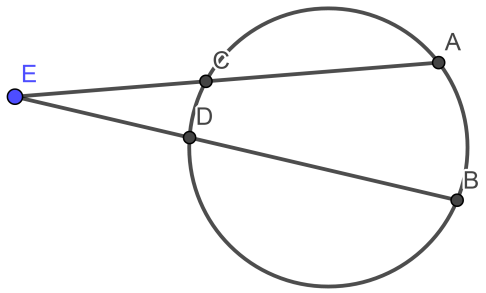


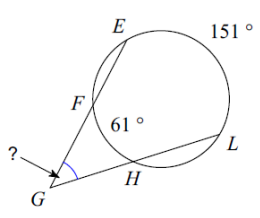
Problem 3. Consider a circle and a point E outside of it. Draw a line segment starting at E, entering the circle at C, and ending on the other side of the circle at A. Draw a line segment starting at E, entering the circle at D, and ending on the other side of the circle at B. Join $\overline{BC}$ and $\overline{BA}$.



Show that $m\angle BEC = \frac{1}{2}(m\widehat{AB} - m\widehat{CD})$.
(Hint: Join $\overline{AD}$ and $\overline{BC}$ to get several inscribed angles, then use the Central Angle Theorem.)

Problem 4. Find ? is the first, and find x in the second.

3)



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