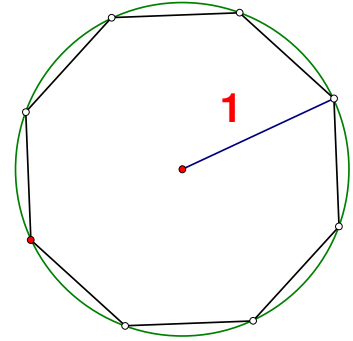


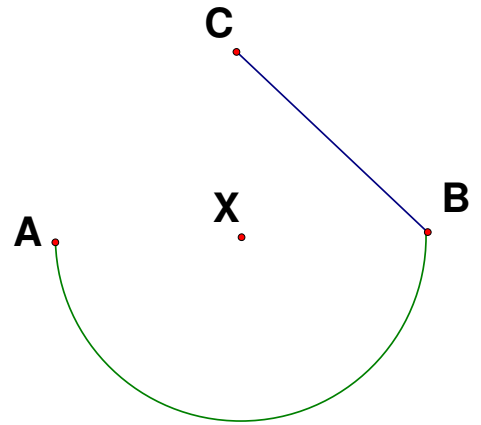
Advanced Math
Problem Solving #1
Quarter 1

1. Find the area of a regular octagon inscribed in a circle of radius.



2. Archimedes, Euclid, Fermat, and Gauss had a math competition. Archimedes said, "I did not finish 1st or 4th." Euclid said, "I did not finish 4th." Fermat said, "I finished 1st." Gauss said, "I finished 4th." There were no ties in the competition, and exactly three of the mathematicians told the truth. Who finished first and who finished last?

3. A ship travels from point A to point B along a semicircular path, centered at Island X. Then it travels along a straight path from B to C. Sketch a graph that best shows the ship's distance from Island X as it moves along its course. Be sure to label the axes on the graph.



4. An Ancient manuscript contained this statement: " $x^2 + bx + 30$ has two integer roots" Unfortunately it is impossible to read the positive integer b . How many possibilities are there for b ?