## Euclidean Geometry

## Lectures

## Proving The Angle Bisector Theorem

1. Given that the circles on the picture shown are tangent to each other, find the radius of the smallest circle. Solution
2. Given a circle and an external point $P$, construct the tangent lines to the circle from $P$. Solution

3. The two circles shown on the picture have the same center and their radii are in a ratio of 3 to 1 . In triangle $A B C$, side $A C$ is a diameter in the larger circle and side $B C$ is tangent to the smaller circle. Side $A B$ is 18 units long. Find the exact value of the length of side $A C \quad$ Solution

4. Find the area of the shaded region. Solution


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