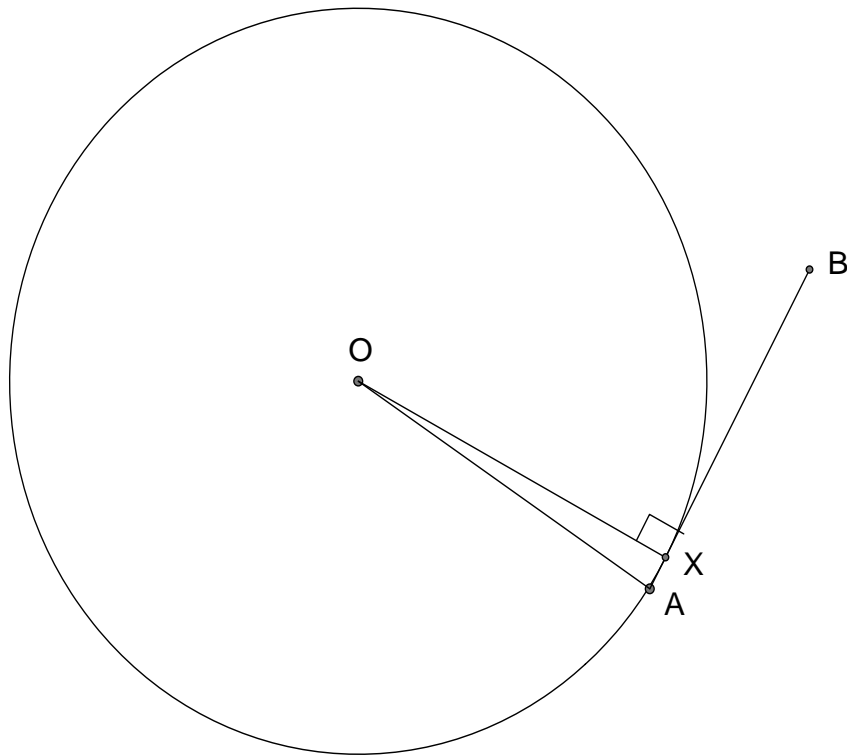


Year 10 Mathematics Extension Investigation

Circle Geometry Properties!!! Take Home Part Solution 4 of 7

TASK FOUR: Tangents and Radii Theorem



Given: Circle O, line AB tangent to O at point A, and radius OA.

To Prove: $\angle OAB = 90^\circ$

Extension to the diagram: Join O to X a point on AB such that $OX \perp AB$

Proof: OX is the shortest distance to O from AB.

OA is shorter than OX.

\therefore OA is the shortest distance to O from AB.

$\therefore \angle OAB = 90^\circ$

A perpendicular line is the shortest distance to a point from a line.

A radius is shorter than a line segment from the centre of a circle to a point on the exterior of the circle.

By Contradiction

Q.E.D.