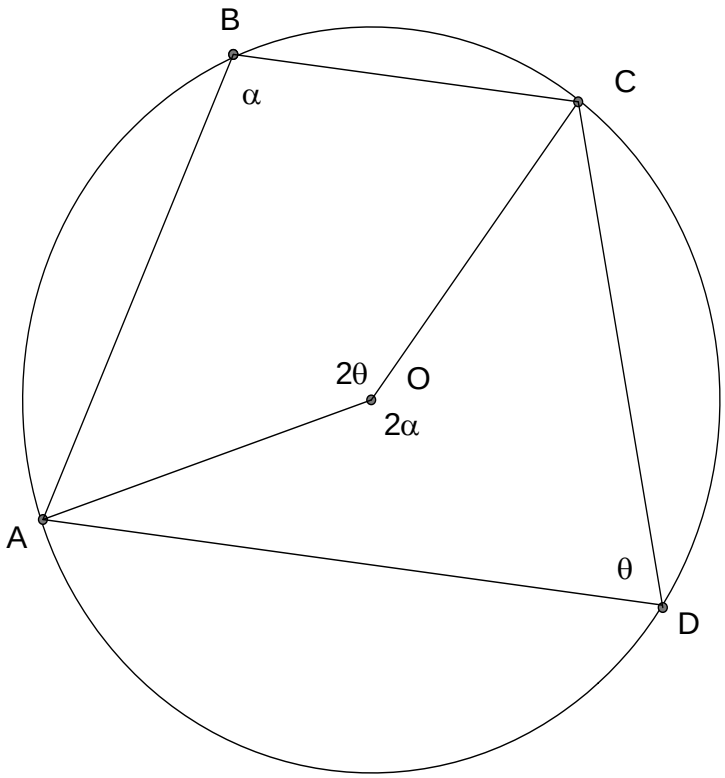
Year 10 Mathematics Extension Investigation

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

TASK SEVEN: Cyclic Quadrilaterals Theorem



Given: Circle O and Cyclic quadrilateral ABCD.

To Prove: $\angle ABC + \angle ADC = 180°$
$\angle BCD + \angle BAD = 180°$

Extension to the diagram: Radii OA and OC.

Proof: Let $\angle ABC = \alpha$ and $\angle ADC = \theta$

	Obtuse $\angle AOC = 2\theta$	Central angle theorem.
	Reflex $\angle AOC = 2\alpha$	Central angle theorem.
	$2\theta + 2\alpha = 360°$	Rotational angle.
$\therefore$	$\theta + \alpha = 180°$	
$\therefore$	$\angle ABC + \angle ADC = 180°$ $\angle BCD + \angle BAD = 180°$	Can be proved similarly by adding radii OB and OD.

Q.E.D.