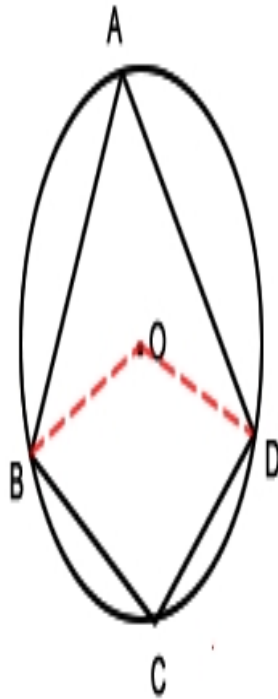


Proof



The opposite angles of a cyclic quadrilateral are supplementary.

Statement

ABCD cyclic quadrilateral

O is circle center

$$\angle BOD = 2\angle BAD$$

$$\angle BOD (\text{reflex}) = 2\angle BCD$$

$$\angle BOD + \angle BOD (\text{reflex}) = 2\angle BAD + 2\angle BCD$$

$$\angle BOD + \angle BOD (\text{reflex}) = 360^\circ$$

$$2\angle BAD + 2\angle BCD = 360^\circ$$

$$\angle BAD + \angle BCD = 180^\circ$$

$$\angle ABC + \angle ADC + \angle BAD + \angle BCD = 360^\circ$$

$$\angle ABC + \angle ADC + 180^\circ = 360^\circ$$

$$\angle ABC + \angle ADC = 180^\circ$$

Therefore, the opposite angles of a cyclic quadrilateral are supplementary.

Reason

Given

Given

Inscribed-central angle property

Inscribed-central angle property

Angles at a point

Angles in a circle

Angles in a quadrilateral