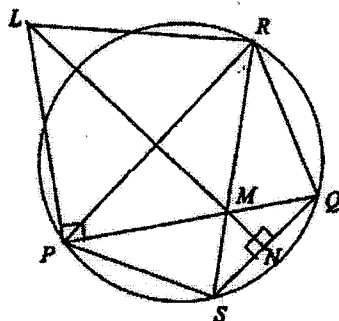


**PAST EXAMINATION QUESTIONS:**

**CSSA 2004**

**Question 8**

(a)



$PQ$  and  $RS$  are two chords of a circle which intersect at  $M$  inside the circle.  $MN$  is the perpendicular from  $M$  to  $SQ$ .  $L$  is the point on  $NM$  produced such that  $LP$  is perpendicular to  $PQ$ .

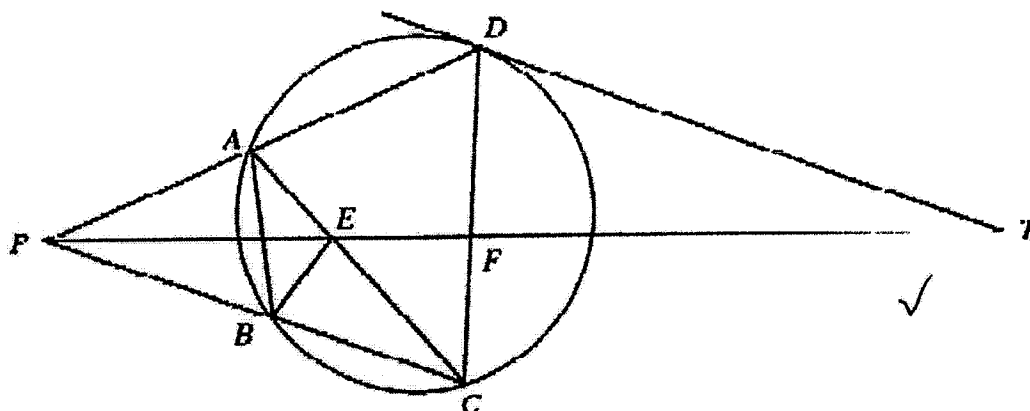
(i) Copy the diagram.

(ii) Show that  $\triangle PML \parallel \triangle NMQ$

(iii) Hence show that  $LR \perp RS$ .

CSSA 2003

(7) (a)



$ABCD$  is a cyclic quadrilateral.  $DA$  produced and  $CB$  produced meet at  $P$ .  $T$  is a point on the tangent at  $D$  to the circle through  $A, B, C$  and  $D$ .  $PT$  cuts  $CA$  and  $CD$  at  $E$  and  $F$  respectively.  $TF = TD$ .

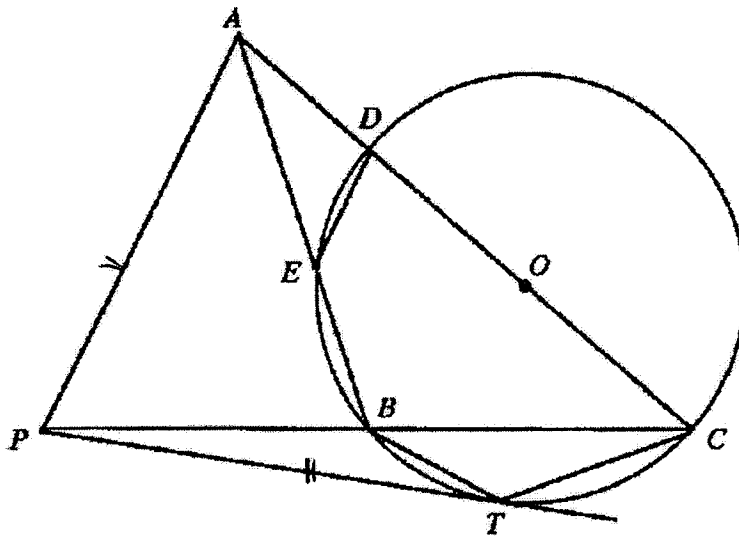
(i) Copy the diagram.

(ii) Show that  $AEFD$  is a cyclic quadrilateral.

(iii) Show that  $PBEA$  is a cyclic quadrilateral.

**CSSA 2001**

(7)  
(a)



*A* is a point outside a circle with centre *O*. *P* is a second point outside the circle such that  $PT = PA$  where  $PT$  is a tangent to the circle at *T*.  $AO$  cuts the circle at *D* and *C*.  $PC$  cuts the circle at *B*.  $AB$  cuts the circle at *E*.

- (i) Copy the diagram.
- (ii) Show that  $\triangle PBT \cong \triangle PTC$ .

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(iii) Show that  $\triangle APB \parallel \triangle CPA$ .

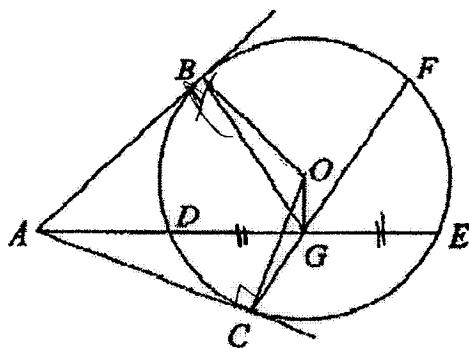
3

(iv) Hence show that  $DE$  is parallel to  $AP$ .

3

CSSA 2000

8. (a)

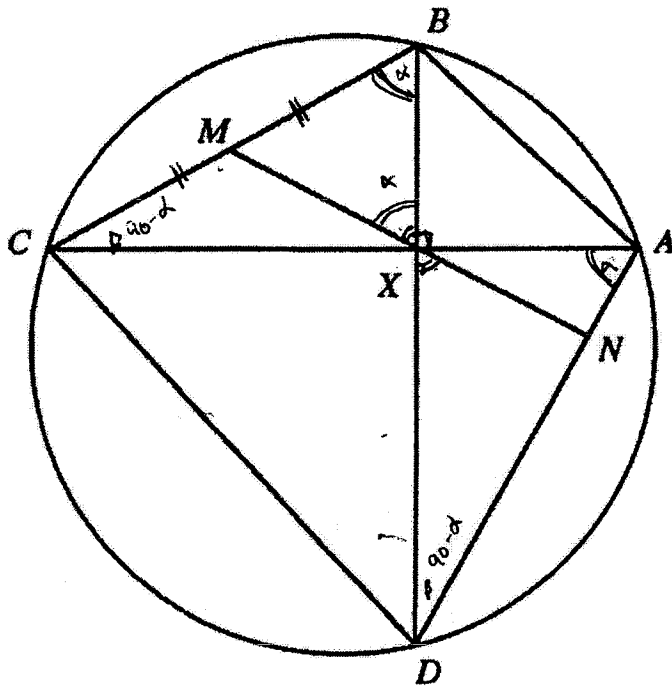


In the diagram,  $AB$  and  $AC$  are tangents from  $A$  to the circle with centre  $O$ , meeting the circle at  $B$  and  $C$ .  $ADE$  is a secant of the circle.  $G$  is the midpoint of  $DE$ .  $CG$  produced meets the circle at  $F$ .

- (i) Copy the diagram.  
 (ii) Show that  $ABOC$  and  $\underline{AOGC}$  are cyclic quadrilaterals.

(iii) Show that  $\underline{BF} \parallel \underline{ADE}$ .

CSSA '99



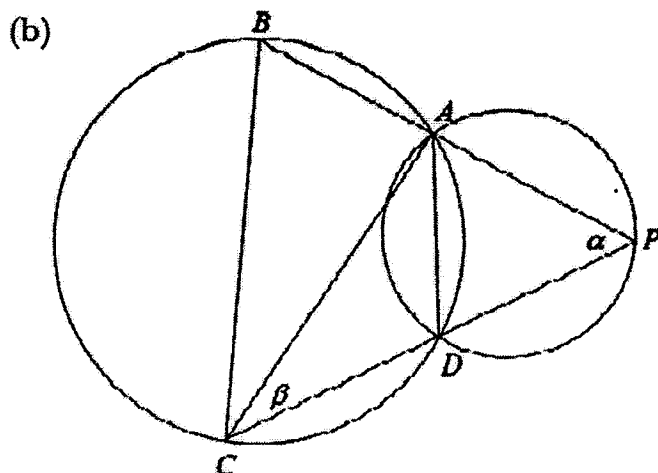
$ABCD$  is a cyclic quadrilateral. The diagonals  $AC$  and  $BD$  intersect at right angles at  $X$ .  $M$  is the midpoint of  $BC$ .  $MX$  produced meets  $AD$  at  $N$ .

(i) Copy the diagram showing the above information.

(ii) Show that  $M\hat{B}X = M\hat{X}B$

(iii) Show that  $MN$  is perpendicular to  $AD$ .

CSSA '98



The two circles intersect at  $A$  and  $D$ .  $P$  is a point on the major arc  $AD$  of one circle. The other circle had radius  $r$ , and  $PA$  produced and  $PD$  produced meet the other circle at  $B$  and  $C$  respectively.  $\angle APD = \alpha$  and  $\angle ACD = \beta$ .

(i) Show that  $BC = 2r \sin(\alpha + \beta)$ .

(ii) As  $P$  moves along the major arc  $AD$  on its circle, show that the length of the chord  $BC$  in the other circle is a constant.

(iii) If the two circles have equal radii, show that  $BC = (2 \cos \alpha).AD$ .