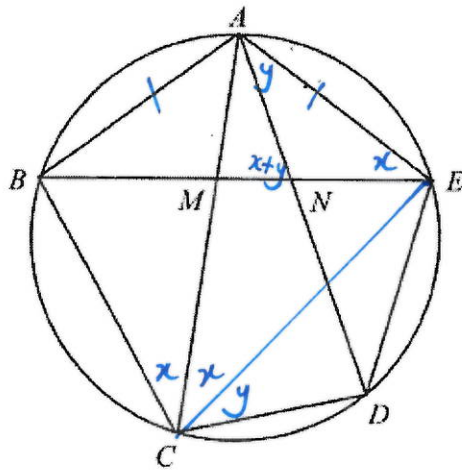


(b)



$ABCDE$, where $AB = AE$, is a pentagon inscribed in a circle. BE meets AC and AD at M and N respectively.

(i) Show that $\angle BEA = \angle ACE$.

2

(ii) Hence show that $CDNM$ is a cyclic quadrilateral.

3

(i) let $\angle BEA = x$

$\therefore \angle BCA = x$ (angles at the circumference subtended by the same arc AB)

$AB = AE$ (given)

$\therefore \angle BCA = \angle ACE = x$ (equal ~~arcs~~ chords subtend = angles at the circumference)

$\therefore \angle BEA = \angle ACE = x$

(ii) let $\angle ECD = y$

$\therefore \angle DAE = y$ (angles at the circumference subtended by the same arc DE).

$\therefore \angle ANM = x+y$ (the exterior \angle of a triangle is = to the opposite interior angle).

$\angle MCD = x+y$ (adjacent angles)

$\therefore \angle MCD = \angle ANM = x+y$

$\therefore CDNM$ is a cyclic quadrilateral

(the exterior angle of quadrilateral $CDNM$ is = to the opposite interior angle)