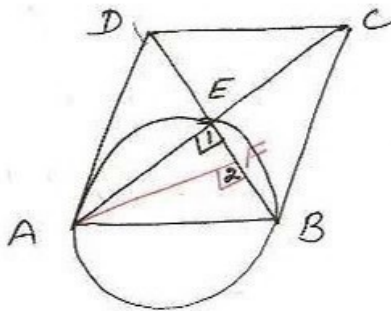


ex 10.6

5



To Prove - circle with diameter AB passes through E

Proof - suppose circle does not pass through E.

let \odot passes through F
 $\angle 1 = 90^\circ$ [diagonals of a rhombus are \perp to each other]

$\angle 2 = 90^\circ$ [angle in semi \odot]

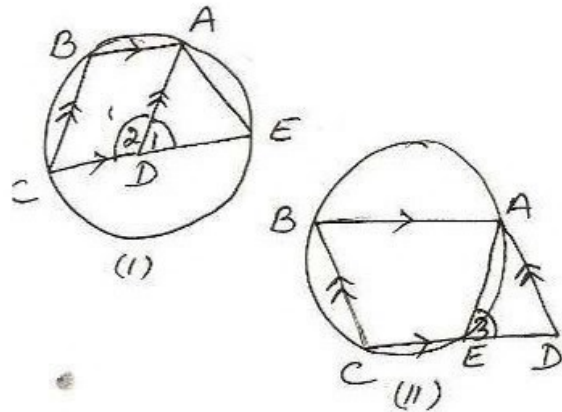
$\therefore \angle 1 = \angle 2$

But this is not possible

\therefore exterior angle of Δ (ΔAEF) cannot be equal to interior opp. angle

\therefore our supposition is wrong and \odot pass thro E.

6



To Prove $AD = AE$

Proof fig (i)

$\square ABCE$ is cyclic

$\therefore \angle B + \angle E = 180^\circ \dots \textcircled{1}$

$\angle 1 + \angle 2 = 180^\circ$ (linear pair axiom)

But $\angle 2 = \angle B$ [opp. angles of a $\parallel\text{gm}$]

$\angle 1 + \angle B = 180^\circ \dots \textcircled{2}$

From $\textcircled{1}$ and $\textcircled{2}$

$\angle B + \angle E = \angle 1 + \angle B$

$\Rightarrow AD = AE$ [converse of isos. Δ prop.]

fig (ii)

$\angle 3 = \angle B$ [exterior angle prop of cyclic \square]

But $\angle B = \angle D$ [opp. angles of a $\parallel\text{gm}$]

$\therefore \angle 3 = \angle D$

$\Rightarrow AD = AE$ [converse of isos. Δ property]