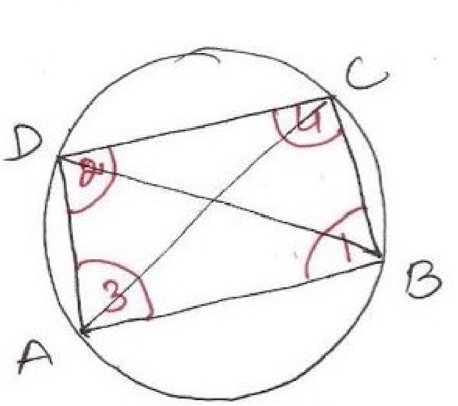
(7)




to prove □ABCD is cyclic

proof diagonal AC is diameter of circumcircle of □ABCD

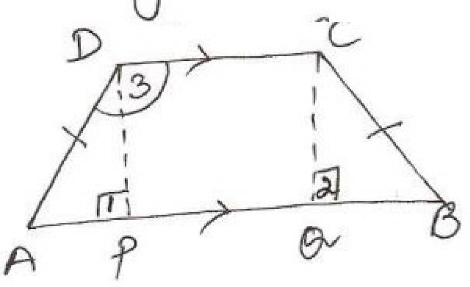
$\therefore \angle 1 = \angle 2 = 90$

(angle in semicircle)

Similarly $\angle 3 = \angle 4 = 90°$

□ABCD is a rectangle [∵ each $\angle = 90°$]

(8)




to prove □ABCD is cyclic

const - draw $DP \perp AB$

$CQ \perp AB$

proof

In $\triangle DPA$ and $\triangle CQB$

$\angle 1 = \angle 2$ (each $90°$)

$AD = BC$ (given)

$DP = CQ$ (distance between ∥ lines)

$\therefore \triangle DPA \cong \triangle CQB$ by RHS

$\angle A = \angle B$ (cpct)

$DC \parallel AB$

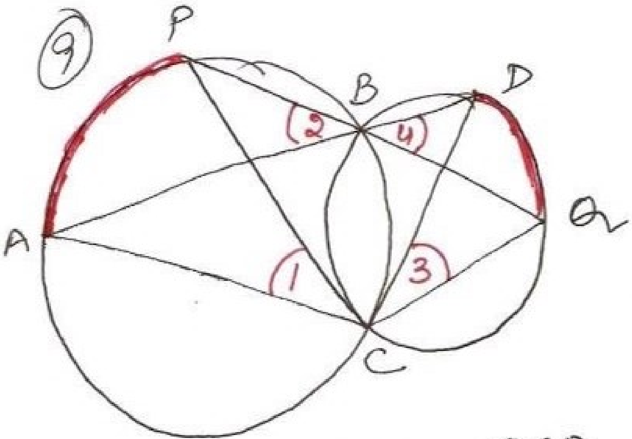
$\angle A + \angle 3 = 180°$ (co. in. $\angle$s)

But $\angle A = \angle B$

$\angle B + \angle 3 = 180°$

$\therefore$ □ABCD is cyclic

(9)




to prove $\angle ACP = \angle QCD$

proof

$\angle 1 = \angle 2$ ... (i)

$\angle 3 = \angle 4$ ... (ii) [angles in same segment]

$\angle 2 = \angle 4$ ... (iii) (vert. opp. $\angle$s)

From (i), (ii), (iii)

$\angle 1 = \angle 3$

$\angle ACP = \angle QCD$