



Congruence Ex 16.5 Q1

Answer :

i) $\angle ADC = \angle BCA = 90^\circ$

$$AD = BC$$

$$\text{and hyp } AB = \text{hyp } AB$$

Therefore, by RHS, $\triangle ADB \cong \triangle ACB$.

ii)

$$AD = AD \text{ (Common)}$$

$$\text{hyp } AC = \text{hyp } AB \text{ (Given)}$$

$$\angle ADB + \angle ADC = 180^\circ \text{ (Linear pair)}$$

$$\angle ADB + 90^\circ = 180^\circ$$

$$\angle ADB = 180^\circ - 90^\circ = 90^\circ$$

$$\angle ADB = \angle ADC = 90^\circ$$

Therefore, by RHS, $\triangle ADB \cong \triangle ADC$

iii)

$$\text{hyp } AO = \text{hyp } DO$$

$$BO = CO$$

$$\angle B = \angle C = 90^\circ$$

Therefore, by RHS, $\triangle AOB \cong \triangle DOC$

iv)

$$\text{Hyp AC} = \text{Hyp CA}$$

$$\text{BC} = \text{DC}$$

$$\angle \text{ABC} = \angle \text{ADC} = 90^\circ$$

Therefore, by RHS, $\triangle \text{ABC} \cong \triangle \text{ADC}$

v)

$$\text{BD} = \text{DB}$$

Hyp AB = Hyp BC, as per the given figure.

$$\angle \text{BDA} + \angle \text{BDC} = 180^\circ$$

$$\angle \text{BDA} + 90^\circ = 180^\circ$$

$$\angle \text{BDA} = 180^\circ - 90^\circ = 90^\circ$$

$$\angle \text{BDA} = \angle \text{BDC} = 90^\circ$$

Therefore, by RHS, $\triangle \text{ABD} \cong \triangle \text{CBD}$

Congruence Ex 16.5 Q2

Answer :

(i) Yes, $\triangle \text{ABD} \cong \triangle \text{ACD}$ by RHS congruence condition.

(ii) We have used Hyp AB = Hyp AC

AD = DA

and $\angle \text{ADB} = \angle \text{ADC} = 90^\circ$ (AD \perp BC at point D)

(iii) Yes, it is true to say that BD = DC (c.p.c.t) since we have already proved that the two triangles are congruent.

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