CHAPTER-7
TRIANGLES

1 Exercise 7.1

Q1. In quadrilateral $ACBD$,

$$AC = AD \tag{1}$$

and AB bisect $\angle A$ (see Fig.**??**). Show that $\triangle ABC \cong \triangle ABD$. What can you say about BC and BD? **Solution:** It is given that AC and AD are equal i.e.,

$$AC = AD \tag{2}$$

and the line segment AB bisects $\angle A$.
We will have to now prove that the two triangles ABC and ABD are similar i.e., $\triangle ABC \cong \triangle ABD$.
Proof: Consider the triangles $\triangle ABC$ and $\triangle ABD$

1.
$$AC = AD \tag{3}$$
(It is the given in the question)

2.
$$AB = AB \tag{4}$$
(Common)

3.
$$\angle CAB = \angle DAB \tag{5}$$
(Since AB is the bisector of angle A)

So, by **SAS congruency criterion**,

$$\triangle ABC \cong \triangle ABD \tag{6}$$

.
For the second part of the question, BC and BD are of equal lengths by the rule of $C.P.C.T$.

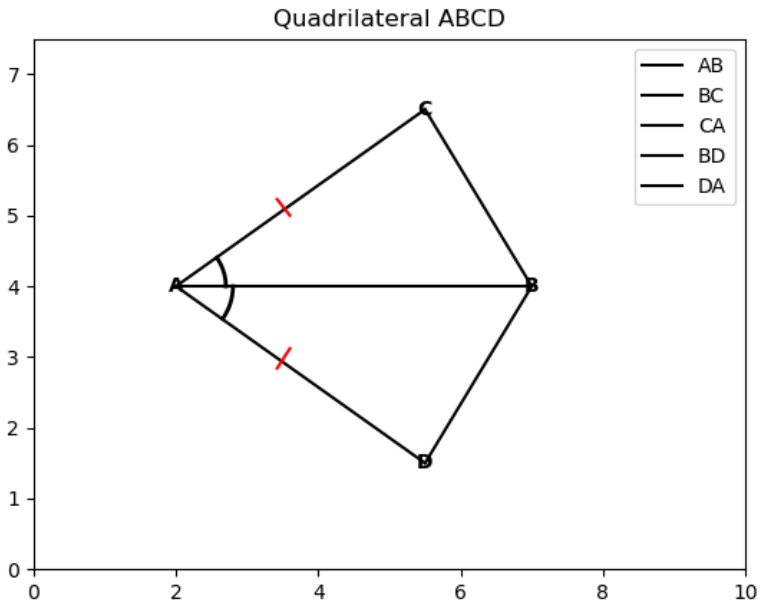

Figure 1: