Assignment 1

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***Abstract*—This a simple document that explains how to find results using congruency of triangles.**

Download all latex-tikz codes from

https://github.com/saranshbali/EE5609/tree/master/Assignment1/Latex

1 Problem

ABCD is a quadrilateral in which AD = BC and $\angle DAB = \angle CAB$. Prove that

$$a) \quad \triangle ABD \cong \triangle BAC \tag{1.0.1}$$

$$b) \quad BD = AC \tag{1.0.2}$$

$$c) \quad \angle ABD = \angle BAC \tag{1.0.3}$$

2 Solution

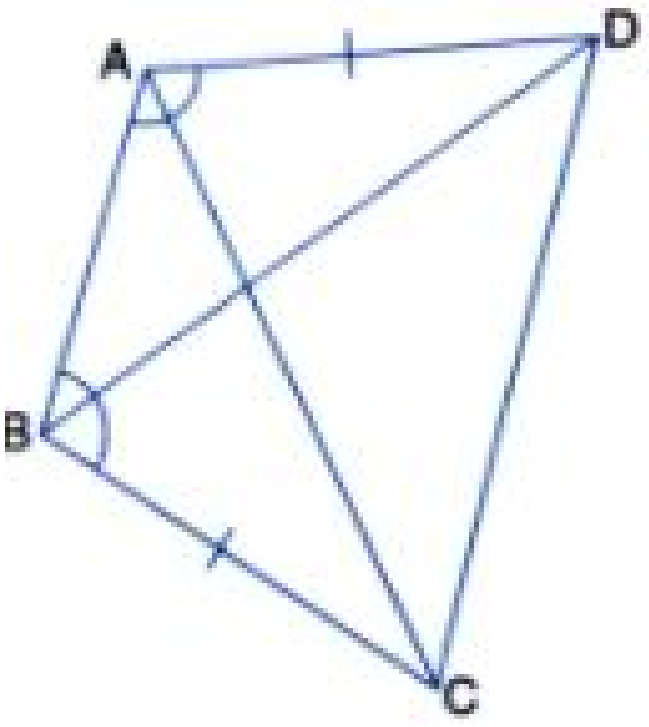

Fig. 1

ABCD is a quadrilateral, where AD=BC and $\angle DAB = \angle CBA$.

In $\triangle ABD$ and $\triangle BAC$,

$$AD = BC \qquad [Given] \tag{2.0.1}$$

$$\angle DAB = \angle CBA \qquad [Given] \tag{2.0.2}$$

$$AB = BA \qquad [Common\ Side] \tag{2.0.3}$$

Hence, by SAS Congruence rule, $\triangle ABD \cong \triangle BAC$ proving (a).

Now, since $\triangle ABD \cong \triangle BAC$, thus by CPCT (Corresponding Parts of Congruent Triangle)

$$BD = AC \tag{2.0.4}$$

$$\angle ABD = \angle BAC \tag{2.0.5}$$

proving (b) and (c).