

Assignment 3

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Abstract—This document solves a problem based on the congruency of a triangles.

Download latex-tikz codes from

[https://github.com/priya6971/
matrix_theory_EE5609/tree/master/
Assignment3](https://github.com/priya6971/matrix_theory_EE5609/tree/master/Assignment3)

In $\triangle ABC$, \mathbf{M} is midpoint of hypotenuse AB , thus

$$\mathbf{M} = \frac{\mathbf{A} + \mathbf{B}}{2} \quad (2.0.1)$$

$$\mathbf{M} = \frac{\mathbf{C} + \mathbf{D}}{2} \quad (2.0.2)$$

Now it is given that $AC \perp BC$

$$\Rightarrow (\mathbf{A} - \mathbf{C})^T (\mathbf{B} - \mathbf{C}) = 0 \quad (2.0.3)$$

1 PROBLEM

In right triangle ABC , right angled at C , \mathbf{M} is the mid-point of hypotenuse AB . C is joined to \mathbf{M} and produced to a point \mathbf{D} such that $DM = CM$. Point \mathbf{D} is joined to point \mathbf{B} . Show that:

$$a) \quad \triangle AMC \cong \triangle BMD \quad (1.0.1)$$

$$b) \quad \angle DBC = 90^\circ \quad (1.0.2)$$

$$c) \quad \triangle DBC \cong \triangle ACB \quad (1.0.3)$$

$$d) \quad CM = \frac{1}{2}AB \quad (1.0.4)$$

2 SOLUTION

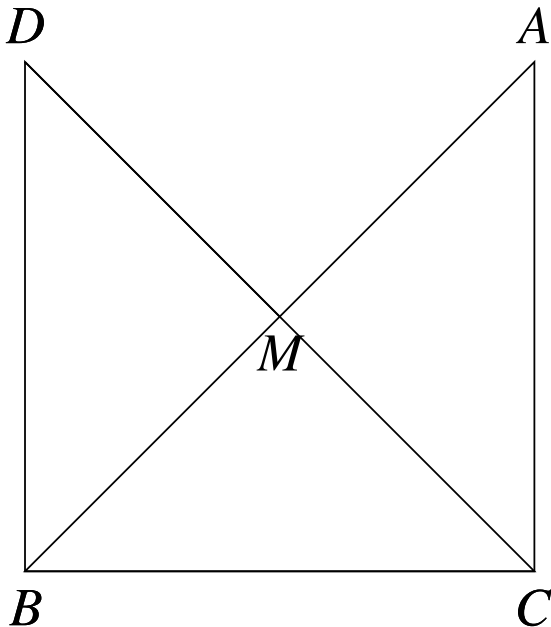


Fig. 1: Triangle ABC and DBC