Math Computing

NCERT 9.7.1.6

This question is from class 9 NCERT chapter 7.triangles

1. **AC** = **AE** , **AB** = **AD** and $\angle BAD = \angle EAC$. Show that**BC** = **DE**

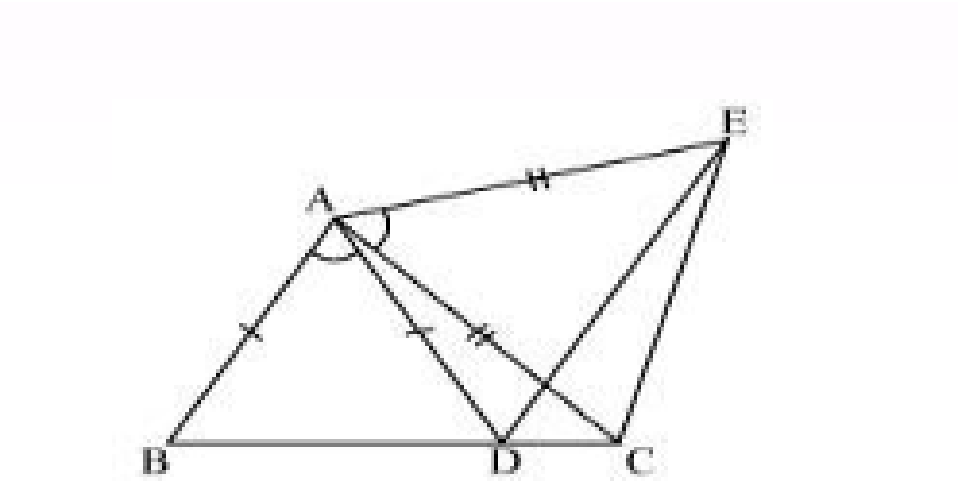

Figure 1: $\triangle$**ABC** *and* $\triangle$**ADE**

Construction steps:

(i) Let assume, the input parameters are,

Parameter	**Value**	**Description**
θ	$60°$	$\angle BAD = \angle CAE$
B	$\begin{pmatrix}0\\0\end{pmatrix}$	Reference point at origin
D	$\begin{pmatrix}6\\0\end{pmatrix}$	point **D** on the same axis of **B**
C	$\begin{pmatrix}8\\0\end{pmatrix}$	point **C** on the same axis of **B**

Table 1: Input Parameters

$\therefore$ the output can be calculated as,

Parameter	**Value**	**Description**
$r1$	$\|B - D\|$	Length of **BD**
A	$\mathbf{D} + \begin{pmatrix}-r1\cos\theta\\ r1\sin\theta\end{pmatrix}$	From point **D** makes an angle θ in clock-wise with line $(\mathbf{AD}, \mathbf{AB})$
$r2$	$\|B - C\|$	Length of **BC**
E	$\mathbf{D} + \begin{pmatrix}r2\cos\theta\\ r2\sin\theta\end{pmatrix}$	From point **D** makes an angle θ in anticlock-wise with line $(\mathbf{AC}, \mathbf{CE})$

Table 2: Output Parameters

$\therefore$ By, joining these points forms the required figure

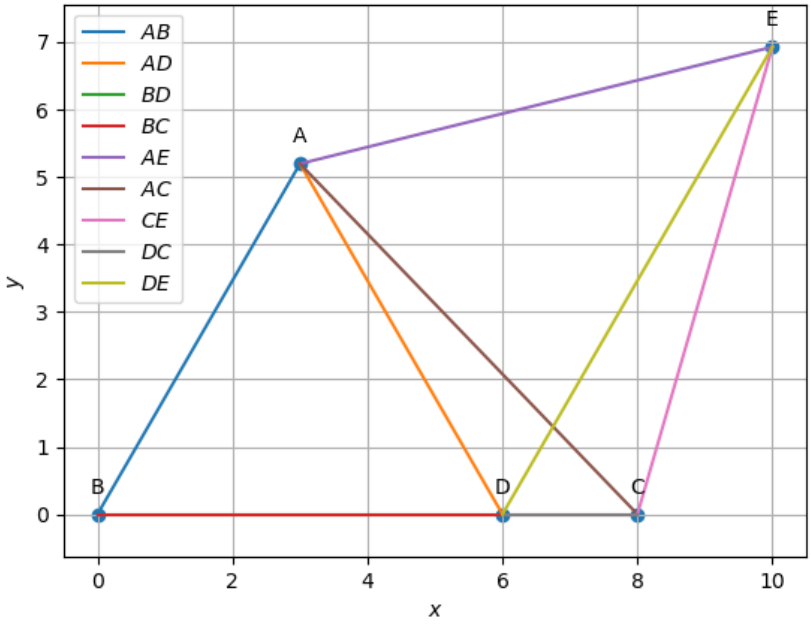

Figure 2: $\triangle$**ABC** *and* $\triangle$**ADE**