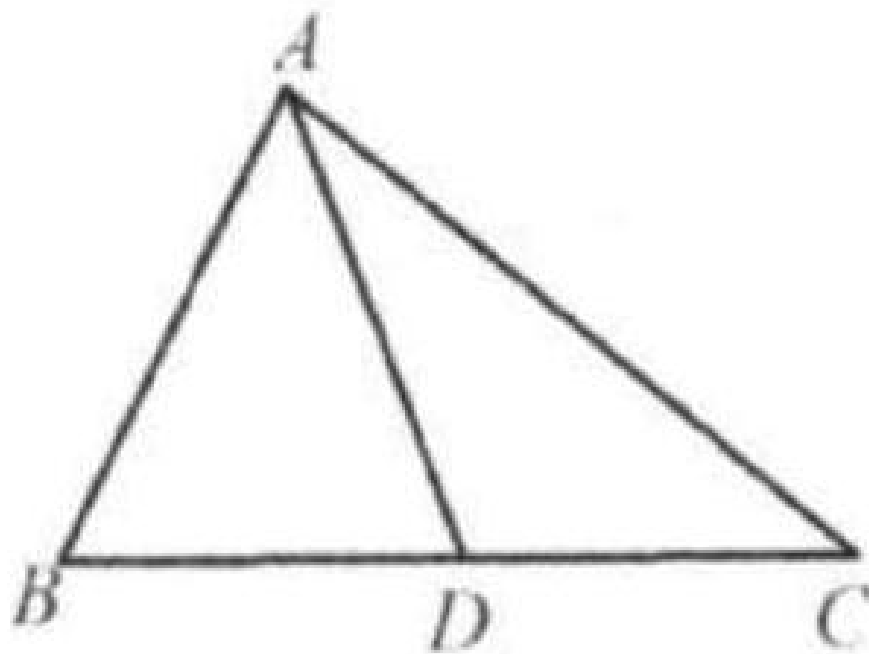


## Example 1

Prove that the sum of any two sides of a triangle is greater than twice the length of median drawn to the third side.

Proof: As shown in the figure, in  $\triangle ABC$ ,  $AD$  is the median. We want to prove that  $AD < \frac{1}{2}(AB + AC)$ .



Extend  $AD$  to  $E$  such that  $AD = DE$ .

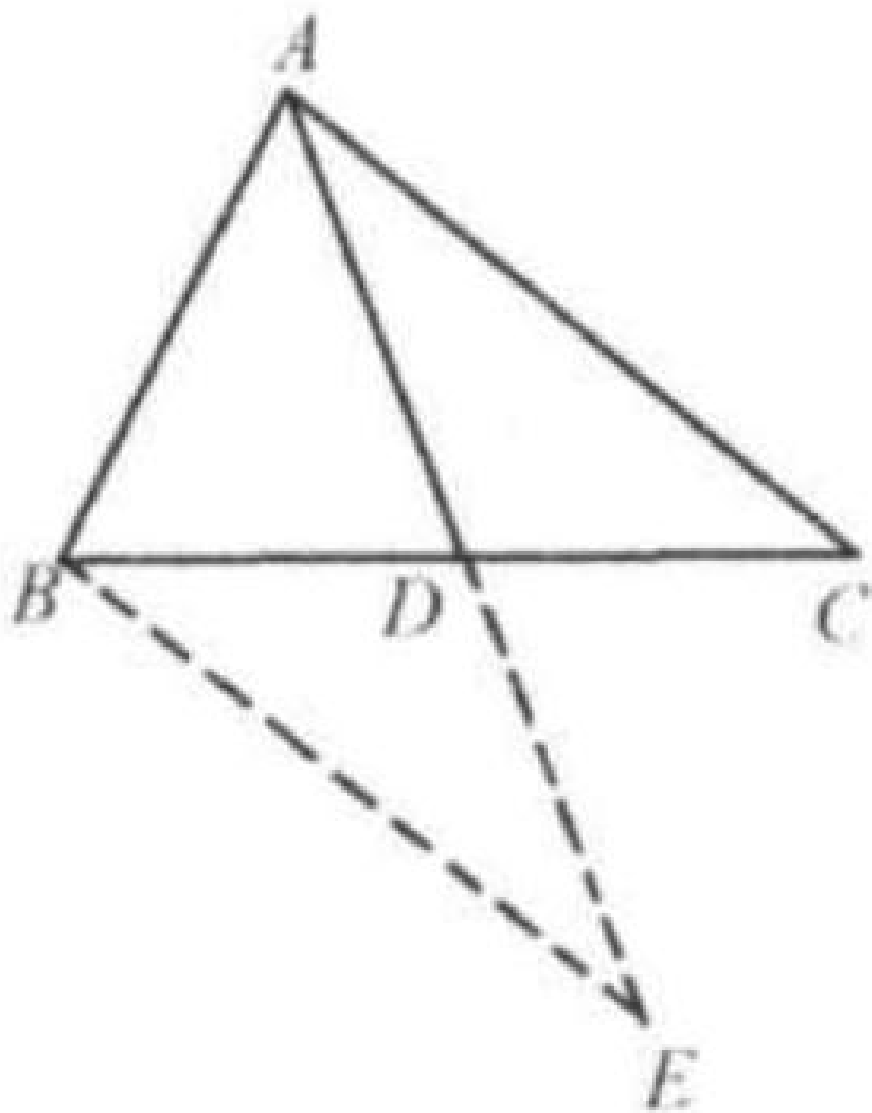
Connect  $BE$ .

Since  $DE = AD$ ,  $\angle BDE = \angle CDA$ .  $BD = DC$ .

Thus  $\triangle BDE \cong \triangle CDA$ ,  $BE = AC$ ,

In  $\triangle ABE$ ,  $AB + BE > AE = 2AD$ .

So  $AD < \frac{1}{2}(AB + BE)$ .



Since  $BE = AC$ , we have  $AD < \frac{1}{2}(AB + AC)$ .