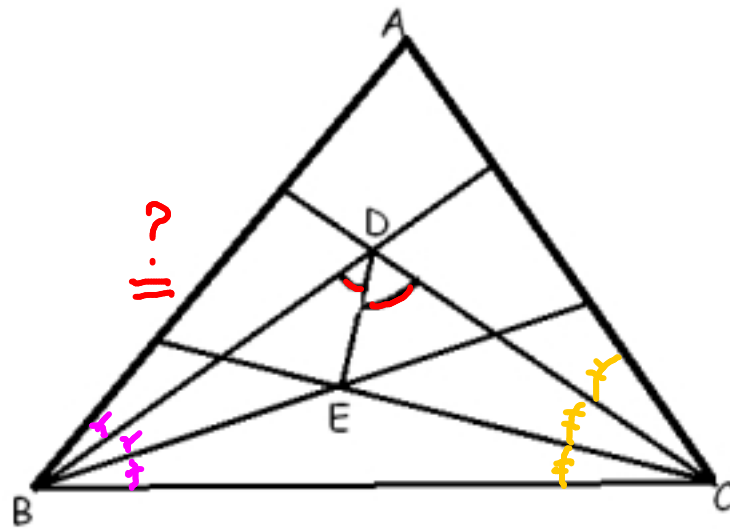


## PROBLEM:

In a triangle  $\triangle ABC$ , two angles,  $\angle ABC$  and  $\angle ACB$  are trisected (divided into three equal parts).

Show that the angles  $\angle BDE$  and  $\angle CDE$ , marked on the picture, are congruent.



## Solution:

Consider a triangle  $\triangle BCD$ . Rays BE and CE are bisectors of angles  $\angle DBC$  and  $\angle DCB$ , hence, their intersection point E is the center of the circle inscribed in  $\triangle BCD$ . Since all three angle bisectors

are concurrent, line segment AE is bisecting the angle  $\angle BCD$  and  $\angle BDE \cong \angle CDE \cong \frac{1}{2} \angle BCD$

