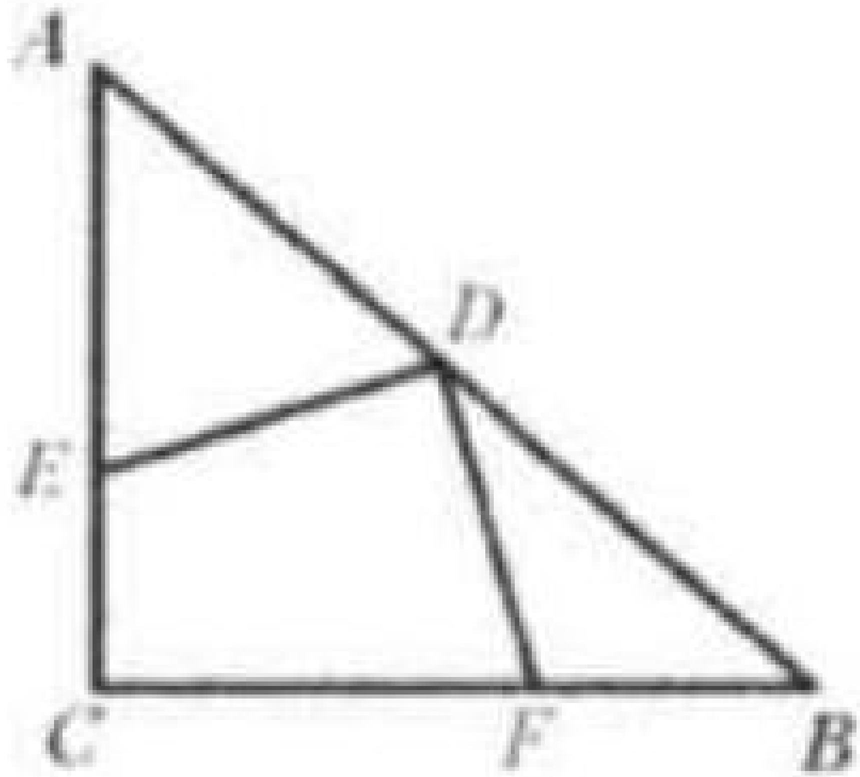
Example 11

$\triangle ABC$ is a right isosceles triangle with $\angle ACB = 90°$ and $AC = BC$.



Point D is the midpoints on sides $AB.DE \perp DF$. Points E, F are on sides AC and BC, respectively. Show that $DE = DF$.

Solution: Draw CD, the median of triangle ABC. Since CD is the median, by Theorem 1.3, $CD = AD = BD$.

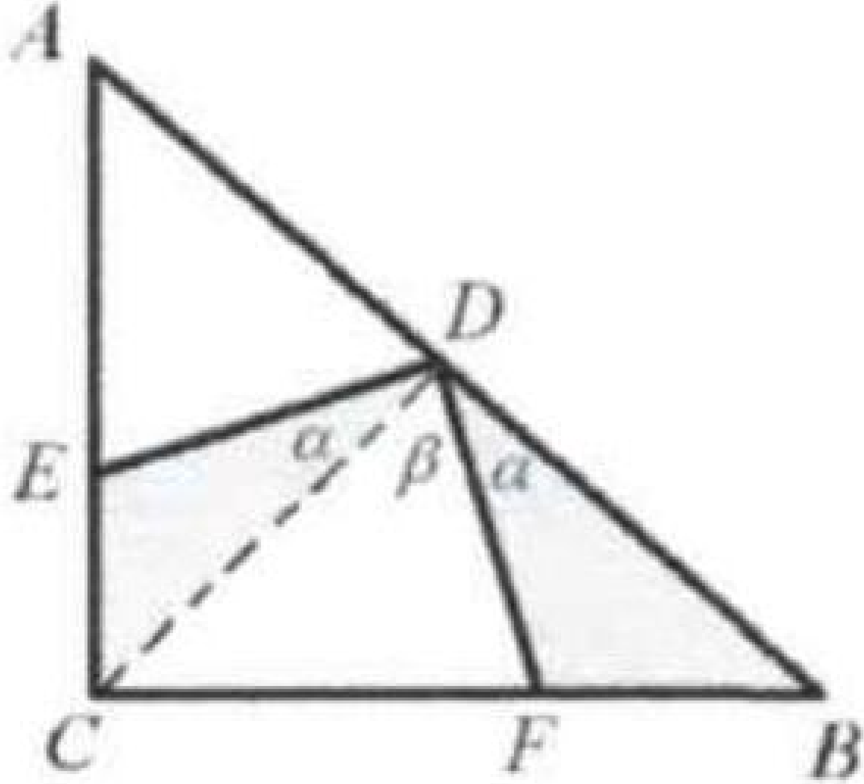
$\angle ACD = 45°.\angle B = 45°.$

$\angle BDF + \angle FDC = 90°.$

$\angle FDC + \angle CDE = 90°.$

$\angle BDF = \angle CDE = \alpha.$

$\angle ACD = \angle ECD = \angle B = 45°.$



$\triangle CED \cong \triangle BFD$.
Thus $DE = DF$.