Problem. Suppose a bisector of angle C in a nondegenerate triangle ABC bisects the opposite side. Show that the triangle is isoselels.

Let D be the point of the intersection of the bisector with $[AB]$.

Assume, $AD = BD$ and

$$\angle ACD = -\angle BCD.$$

Note also that $\triangle ACD$ and $\triangle BCD$ share side $[CD]$.

By SAS we have

$$\triangle ACD \cong \triangle BCD.$$

In particular, $AC = BC$.

Therefore, $\triangle ABC$ is isoselels.