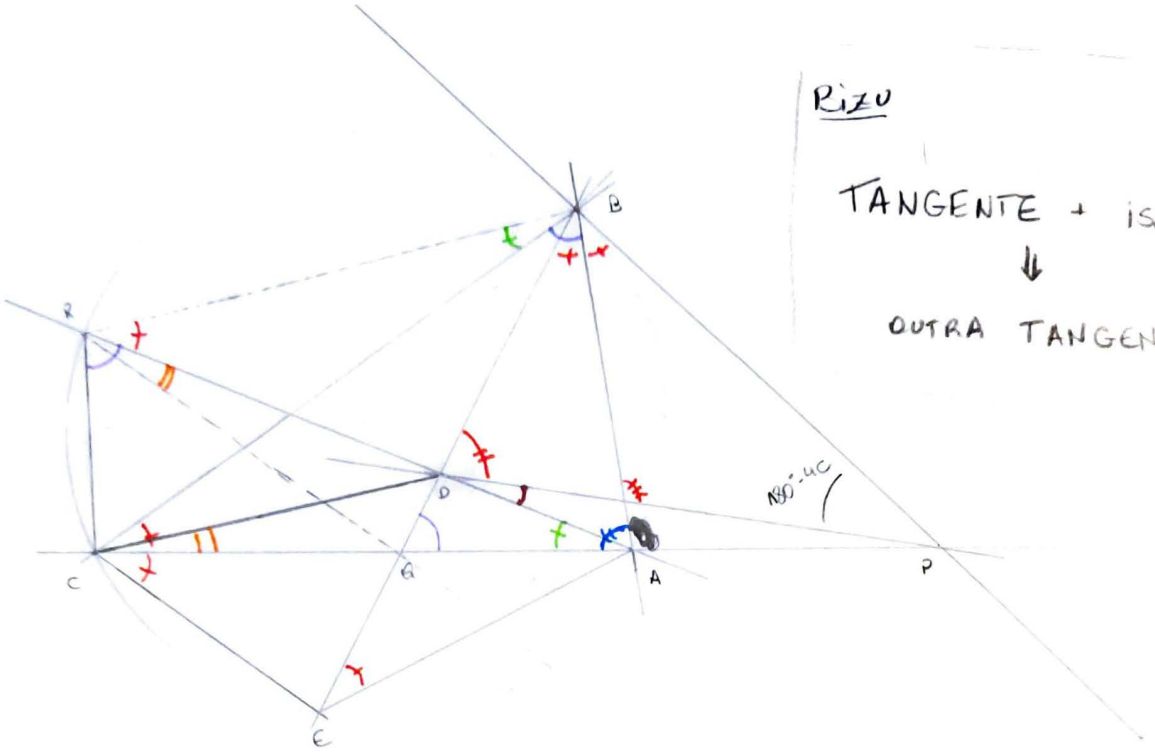
(IMO SL 2013)



Rizu

TANGENTE + ISÓSCELES

⇓

OUTRA TANGENTE

- Lemma 1: PD é tangente a (CDA)

Prova: $PD^2 = PB^2 = PA \cdot PC$ □

- Lemma 2: o(R, D, Q, C).

$\angle CRD = \angle CRA = \angle CBA = 180° - \angle ACB - \angle BAC =$

$= 180° - \angle ABQ - \angle BAQ = \angle BQA = \angle DQA$ □

Logo: $\angle RBQ = \angle RBA - \angle QBA =$

$= (\angle RBC + \angle CBA) - \angle QBA$

$= (\angle RAC + \angle BQA) - \angle QBA$

$= \angle BDA - \angle QBA$

$= (\angle BDP + \angle PDA) - \angle QBA$

$= \angle DBP + \angle DCQ - \angle QBA$

$= \angle DRQ + (\angle ABP)$

$= \angle DRQ + \angle BRD = \angle BRQ$ □