Lesson 5 Problem 4

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Problem 4
Since $ABCD$ is cyclic, $\angle ABD = \angle ACD$ and $\angle ADB = \angle ACB$. $\angle DCT = 180° - \angle ACD - \angle ACB$. In triangle ADB, $\angle DAB = 180° - \angle ADB - \angle ABD$. So $\angle DCT = \angle DAB$. We also have $AD = DC, AB = CT$. Therefore $\triangle DAB \cong \triangle DCT$. So $DB = DT$ and thus $\angle DBT = \angle DTB$.