Equal circles equal chords

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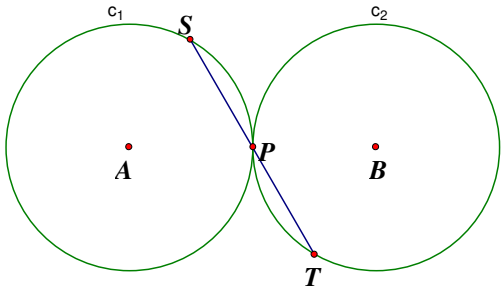
In the figure, c_1 and c_2 are two equal circles touching each other at a point P. A chord passing through P cutting the two circles c_1 and c_2 at S and T respectively.
Prove that $PS = PT$.



A, P and B are collinear.
Join AB, AS and BT.

$AS = AP = BP = BT$	(radii of equal circles)
$\angle APS = \angle BPT$	(vert.opp. $\angle$s)
$\angle ASP = \angle APS$	(base $\angle$s isos. Δ)
$\angle BTP = \angle BPT$	(base $\angle$s isos. Δ)
$\therefore \angle ASP = \angle BTP$	
$\Delta APS \cong \Delta BPT$	(A.A.S.)
$PS = PT$	(corr. sides $\cong \Delta$s)