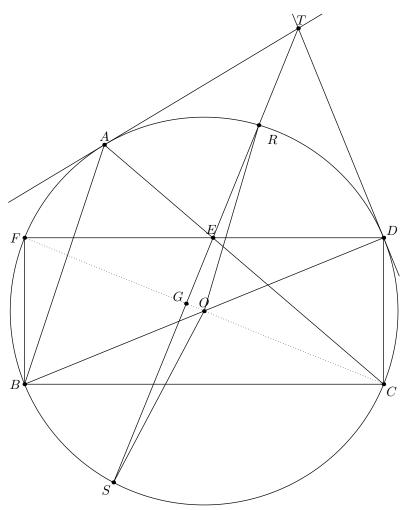
## 2020 Centroamerican Shortlist G2

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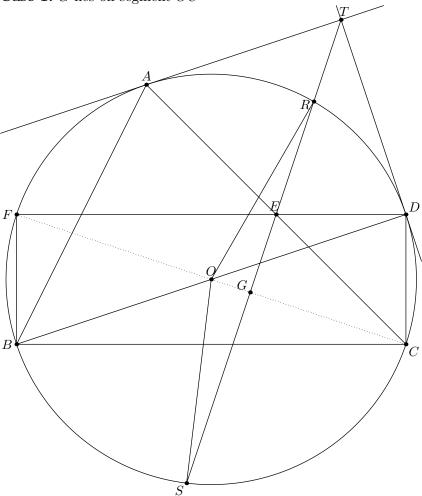


Let  $G = \overline{OC} \cap \overline{TS}$ .

Claim: F, G, O, C are collinear.

*Proof.* Notice the rectangle FBCD. Because O is the intersection of the diagonals of the rectangle, we have that F lies on OC.

Case 1: G lies on segment OC



Because  $\angle OGS = \angle OGR = 90^{\circ}$  we have  $\triangle OGS \cong \triangle OGR$ . Thus we have

$$\angle SGO = \angle RGO \implies \angle FOS = \angle FOR.$$

Case 2: G does not lie on segment OC.

Use diagram 1 for reference.

Again, we have

$$\angle OGS = \angle OGR = 90^{\circ} \implies \triangle GOS \cong \triangle GOR \implies \angle GOS = \angle GOR.$$