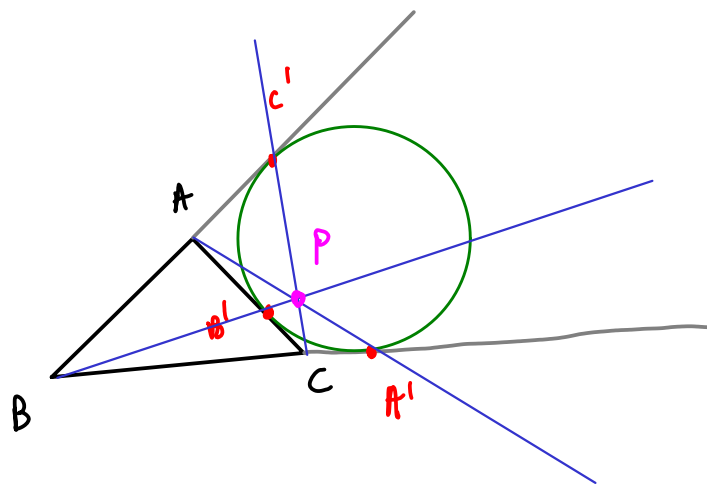




Properties of tan's to cir.

$$\overline{BA'} = \overline{C'B}$$

$$\overline{B'A} = \overline{C'A}$$

$$\overline{CA'} = \overline{CB'}$$

Proof: $\overline{AA'}$, $\overline{BB'}$, $\overline{CC'}$ are concurrent.

$$\text{Consider: } \frac{\overline{BA'}}{\overline{A'C}} \cdot \frac{\overline{CB'}}{\overline{B'A}} \cdot \frac{\overline{AC'}}{\overline{C'B}} = \boxed{\frac{\overline{BA'}}{\overline{C'B}}} \cdot \boxed{\frac{\overline{CB'}}{\overline{A'C}}} \cdot \boxed{\frac{\overline{AC'}}{\overline{B'A}}} = 1$$

Then, by Ceva's Thm, the lines must be concurrent.

A diagram showing an angle labeled A . A green line bisects the angle, and the resulting angle is labeled $\frac{1}{2}A$. An orange arc is drawn on the angle.

B

btc

Startw/ line

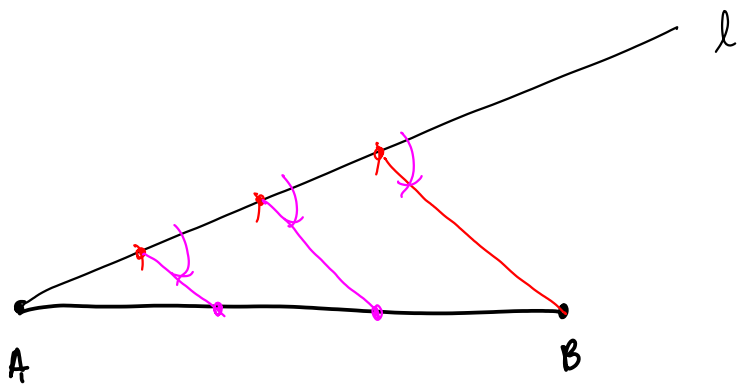
$$\overline{BD} = b + c$$
$$\begin{array}{c} \parallel \\ \smile \end{array}$$

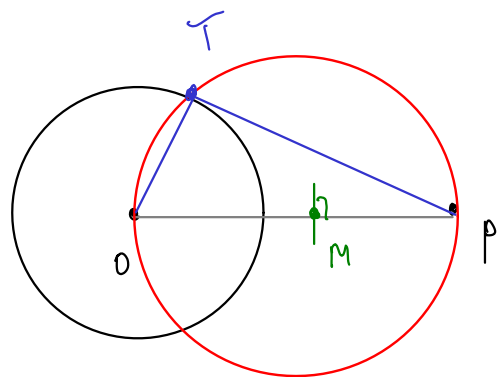
T_{ny} 2.

$$\overline{BD} = l + e$$

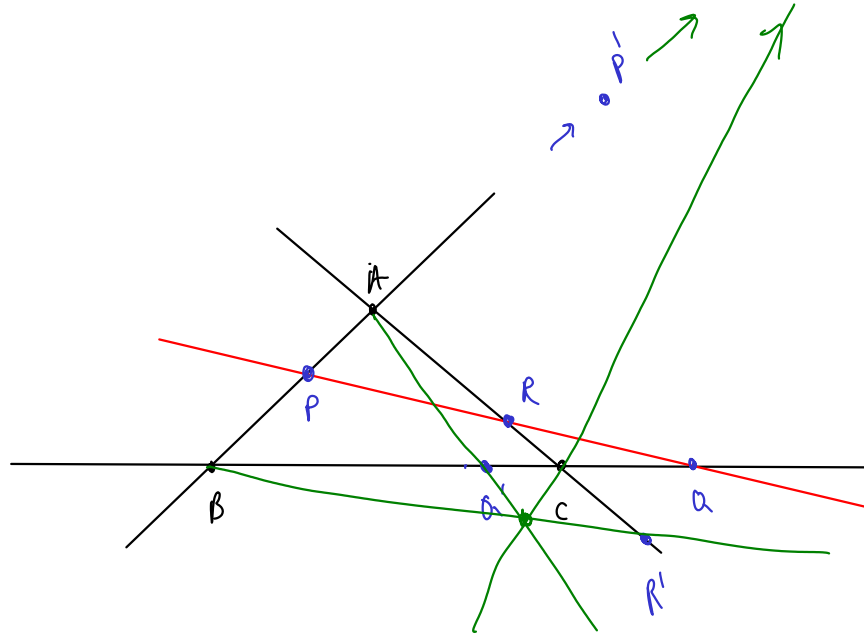
Copy $\frac{1}{2}$ A

$\uparrow \frac{1}{2} A$





2.8.



$$\left\{ \begin{array}{l} (BA, PP') = -1 \\ (AC, RR') = -1 \\ (BC, QQ') = -1 \end{array} \right.$$

Harmonic:

Menelaus: $\frac{\overline{AP}}{\overline{PB}} \cdot \frac{\overline{BQ}}{\overline{QC}} \cdot \frac{\overline{CR}}{\overline{RA}} = -1$

$$\frac{\overline{BP}}{\overline{PA}} \cdot \frac{\overline{P'A}}{\overline{BP'}} = -1 \quad \text{or}$$

plug and chug to replace P, Q, R by P', Q', R'.
Get Ceva's Thm.

$$\frac{\overline{BP}}{\overline{PA}} = \frac{-\overline{BP'}}{\overline{P'A}}$$