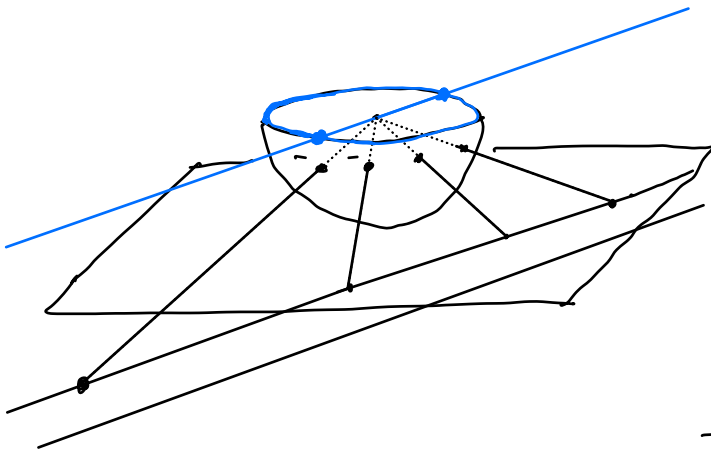
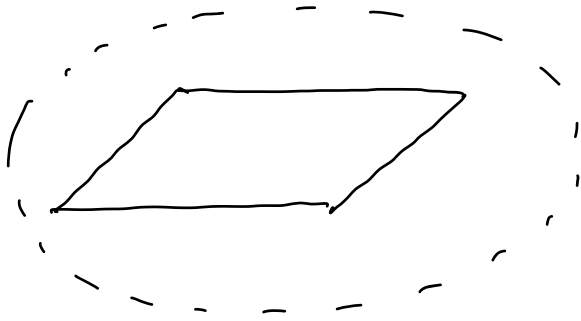
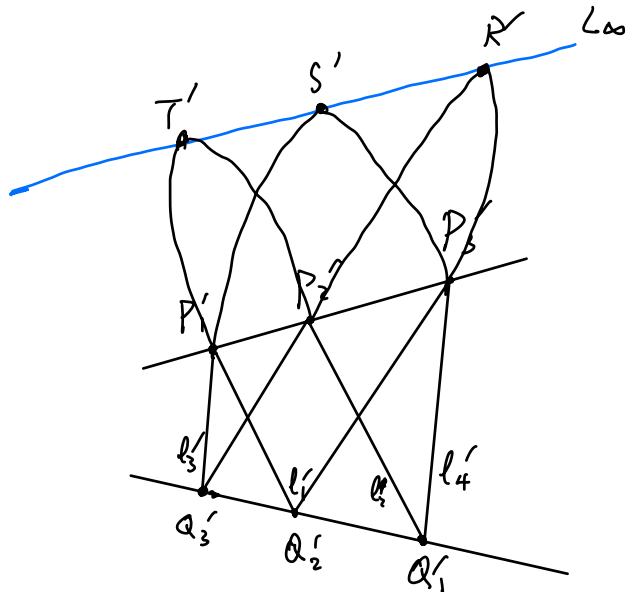
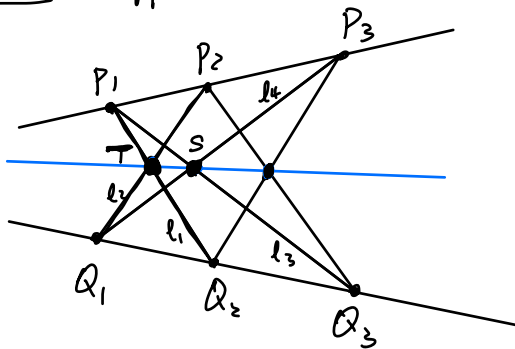


$\mathbb{R}^2 \cup L_\infty$

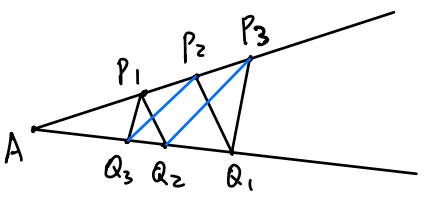
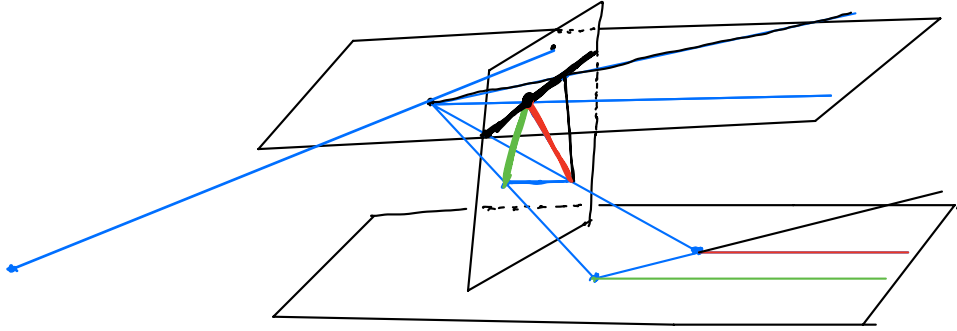


Thm (Pappus Thm)



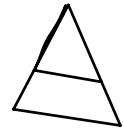
Need to prove: $P_2'Q_3' \parallel P_3'Q_2' \Leftrightarrow R' \in L_\infty$

$\left(\begin{array}{l} P_1'Q_2' \parallel P_2'Q_1' \Leftrightarrow T \in L_\infty \\ P_1'Q_3' \parallel P_3'Q_1' \Leftrightarrow S \in L_\infty \end{array} \right)$



Just need to prove:

$$\frac{|AP_2|}{|AP_3|} = \frac{|AQ_3|}{|AQ_2|}$$

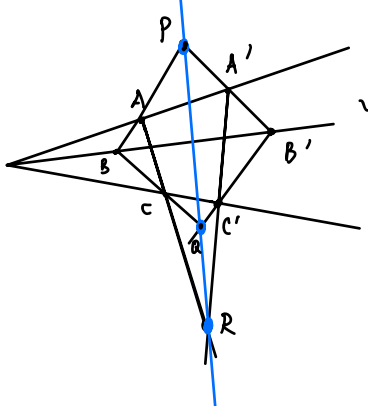


Thales

$$P_1Q_2 \parallel P_2Q_1 \Rightarrow \frac{|AP_2|}{|AP_1|} = \frac{|AQ_1|}{|AQ_2|}$$

$$P_1Q_3 \parallel P_3Q_1 \Rightarrow \frac{|AP_1|}{|AP_3|} = \frac{|AQ_3|}{|AQ_1|}$$

Thm (Desargues' Thm).



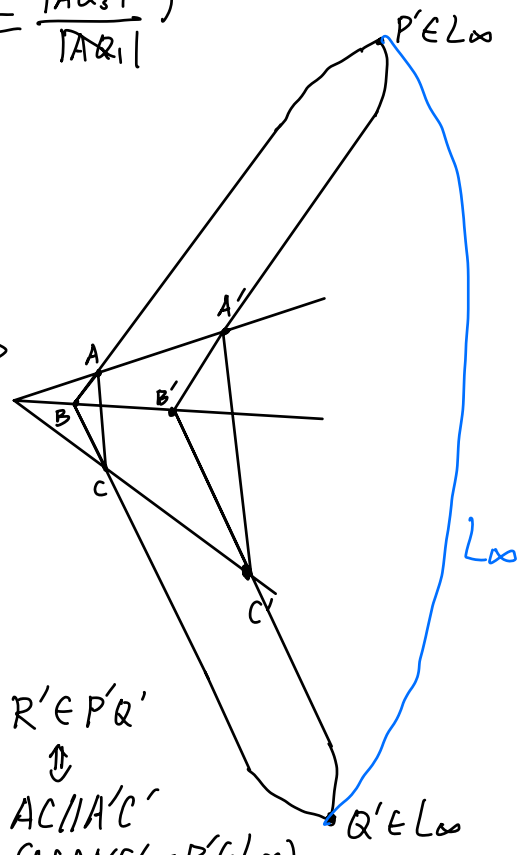
$$R \in \overline{PQ}$$

$$\Leftrightarrow R' \in \overline{P'Q'}$$

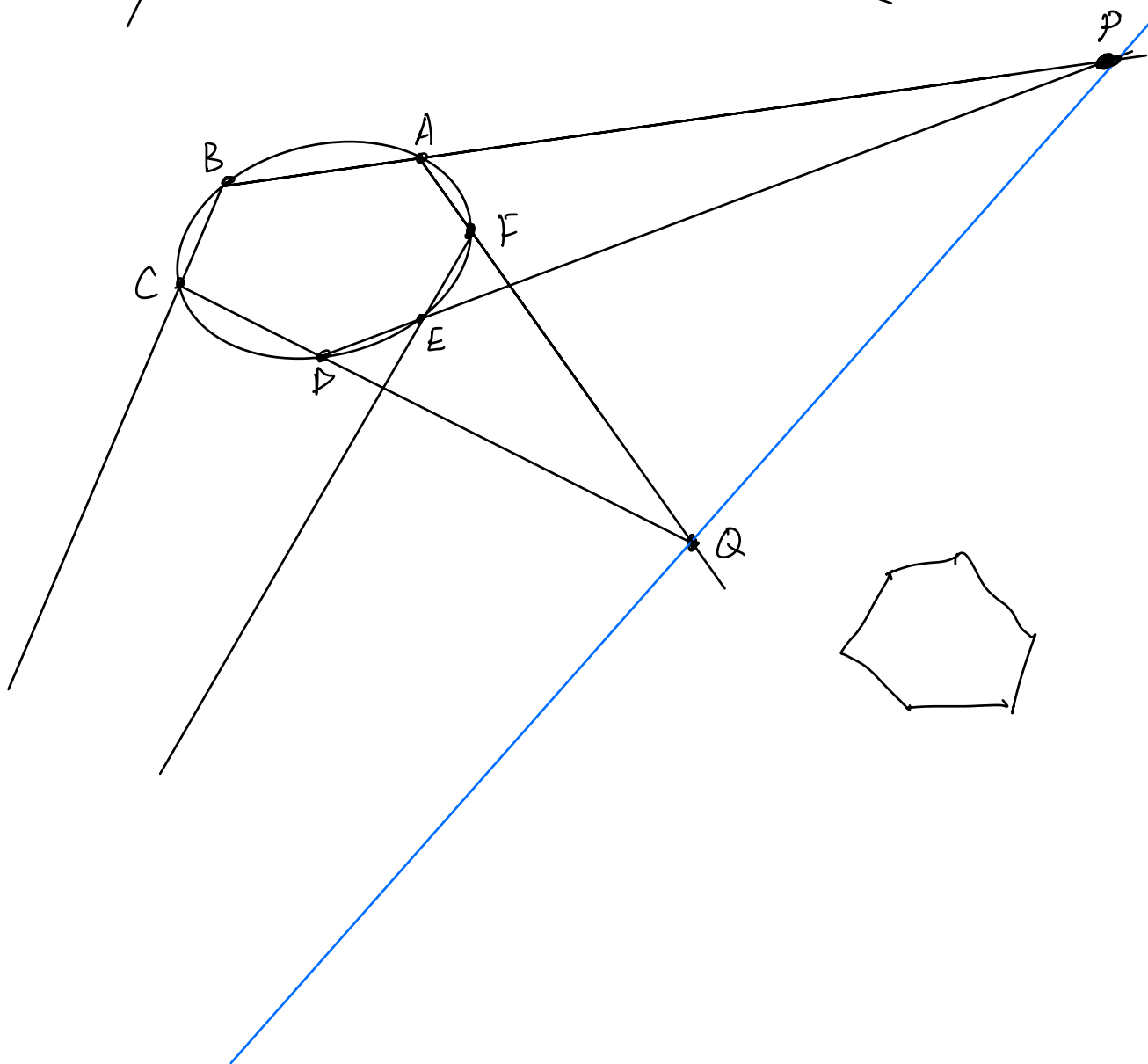
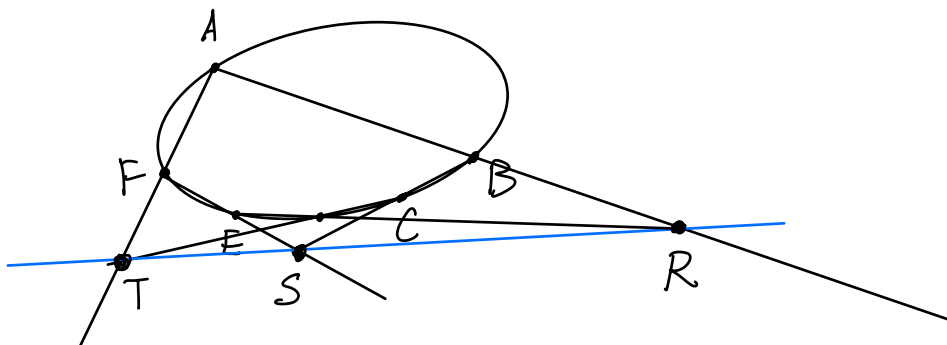
$$\Downarrow$$

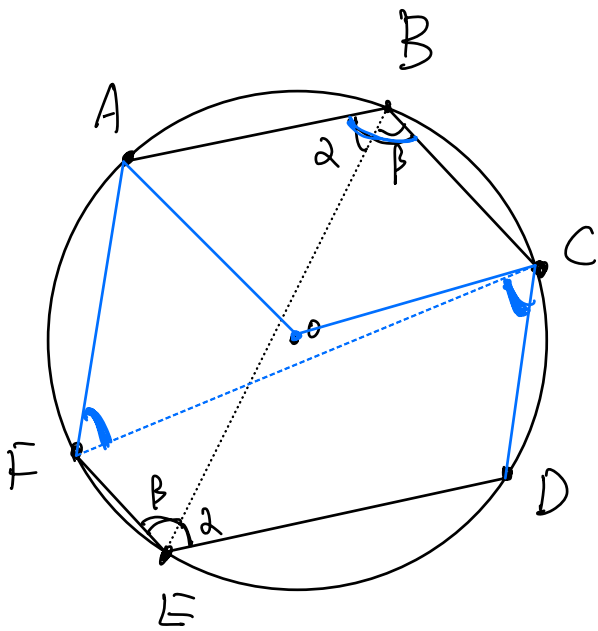
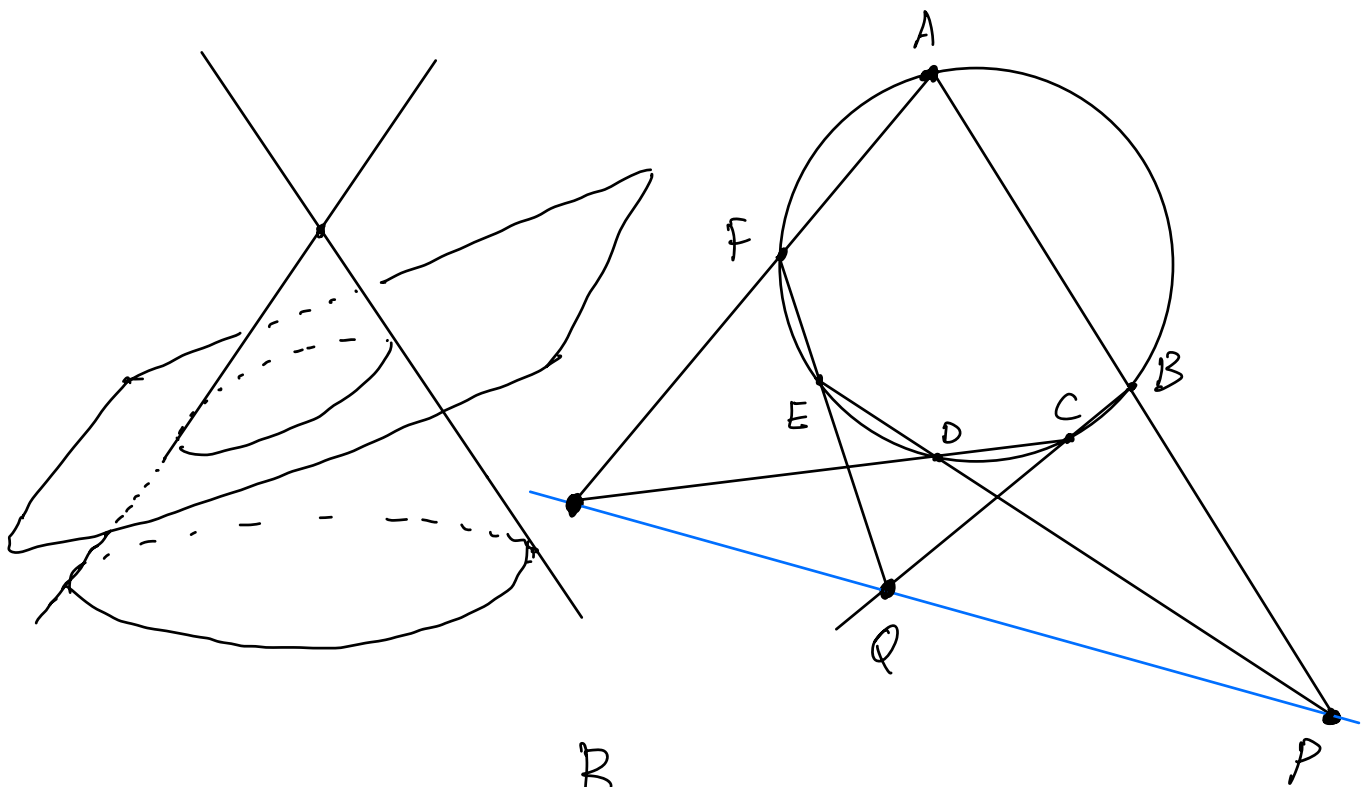
$$AC \parallel A'C'$$

$$(AC \cap A'C' = R' \in L_\infty)$$



Thm (Pascal's Thm).





$$\frac{AB \parallel DE}{BC \parallel EF} \Downarrow CD \parallel AF$$

