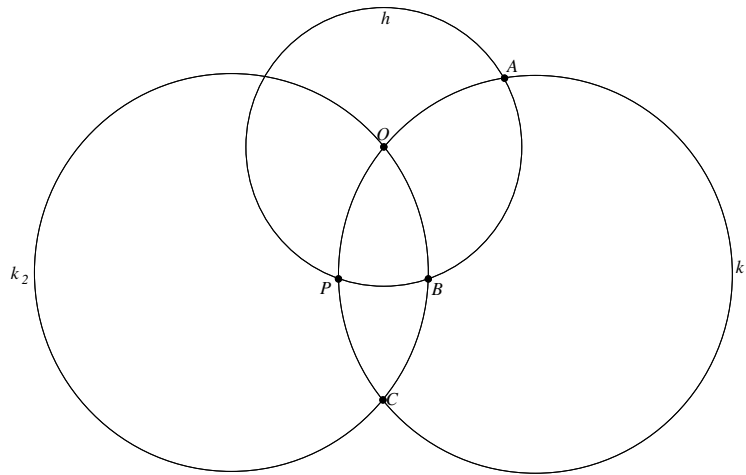


1. Circles  $k_1$  and  $k_2$  have the same radius, and the center of  $h$  is  $O$ . Show that  $A$ ,  $B$  and  $C$  are collinear. *Hint:* show that  $\angle PAC = \angle PAB$ .



*Solution:* We have

$$\begin{aligned}\angle PAC &= \angle POC && \text{both are inscribed in } k_1 \text{ corresponding to arc } PC \\ &= \frac{1}{2}\angle POB && \text{since the whole figure is symmetric w.r.t. } OC \\ &= \angle PAB && \text{since } \angle POB \text{ is the corresponding central angle in } h\end{aligned}$$