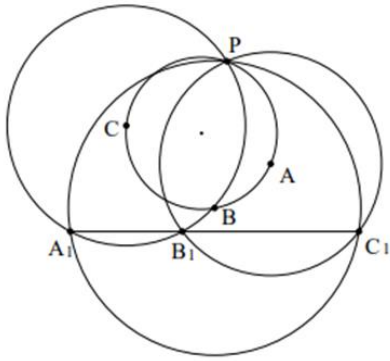


Example 177 : As shown in Figure 3, it is known that A_1 , B_1 , and C_1 are collinear, A is the circumcenter of $\triangle PB_1C_1$, B is the circumcenter of $\triangle PA_1C_1$, and C is the circumcenter of $\triangle PA_1B_1$. To prove: P, C, B, A four points share a circle.



$$\frac{C-P}{C-A} \frac{B-A}{B-P} = \frac{A_1-C_1}{A_1-B_1} \frac{A-B}{P-C_1} \frac{P-B_1}{A-C} \left(\frac{P-C}{P-B_1} \frac{A_1-B_1}{A_1-P} \right) \left(\frac{A_1-P}{A_1-C_1} \frac{P-C_1}{P-B} \right),$$