The angle bisectors drawn from the vertices $A$ and $B$ of a triangle $A B C$ intersect the opposite sides at $A_{1}$ and $B_{1}$, respectively. $P$ is the intersection of the ray $A_{1} B_{1}$ with the circumscribed circle of the triangle. Prove that

$$
\frac{1}{P A}=\frac{1}{P B}+\frac{1}{P C}
$$

