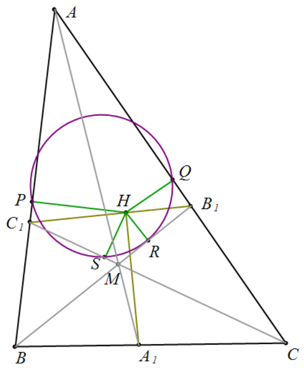

Example 186 : As shown in Figure 1 , ***there is a point*** M in $\triangle ABC$, AM, BM, and CM intersect opposite sides at A_1, B_1, C_1, and A_1H is perpendicular to B_1C_1 at H, passing through H to AB and AC, BB_1, CC_1 as vertical line segments HP, HQ, HR, HS, to prove: P, Q, R, S are four points that share a circle.

$$\frac{\frac{P-Q}{P-S}}{\frac{R-Q}{S-R}}=-\left(\frac{B_1-C_1}{H-A_1}\right)^2\frac{\frac{P-Q}{P-H}}{\frac{A-C}{A-H}}\frac{\frac{P-H}{P-S}}{\frac{C_1-B_1}{C_1-C}}\frac{\frac{C-A}{B_1-C_1}}{\frac{R-Q}{R-H}}\frac{\frac{M-H}{C-C_1}}{\frac{R-H}{R-S}}\frac{\frac{H-A_1}{H-M}}{\frac{H-A}{A_1-H}},$$

$\frac{\frac{H-A_1}{H-M}}{\frac{H-A}{A_1-H}}\in R$ Equivalent to $\angle AHA_1$ and $\angle MHA_1$ complementary to, equivalent to

$\angle AHC_1=\angle MHC_1$, needs to be supplemented to prove this conclusion.