

1. Show that in $\triangle ABC$ we have $\frac{1}{h_a} + \frac{1}{h_b} + \frac{1}{h_c} = \frac{1}{r}$.

2. Let P be a point inside the regular $\triangle ABC$. Show that if x, y, z are the distances of P from a, b and c respectively then $x + y + z = h$ where h is the height of the triangle.