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In $\triangle ABC$ the following relationship holds:

$$\frac{r_a r_b r_c}{h_a h_b h_c} = \frac{R}{2r}$$

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Solution by Daniel Sitaru – Romania

$$\begin{aligned}\frac{r_a r_b r_c}{h_a h_b h_c} &= \frac{\frac{F}{s-a} \cdot \frac{F}{s-b} \cdot \frac{F}{s-c}}{\frac{2F}{a} \cdot \frac{2F}{b} \cdot \frac{2F}{c}} = \frac{abc}{8(s-a)(s-b)(s-c)} = \\ &= \frac{abcs}{8s(s-a)(s-b)(s-c)} = \frac{4RFs}{8F^2} = \frac{4Rr}{8F} = \frac{4Rs}{8rs} = \frac{R}{2r}\end{aligned}$$