Question: -

The exradii r_1, r_2, r_3 of ΔABC are in HP, show that its sides a, b, c are in AP. **(1983, 3M)**

Solution: -

Since, r_1, r_2 and r_3 are exradii of ΔABC are in HP.

$$\therefore \quad \frac{1}{r_1}, \frac{1}{r_2}, \frac{1}{r_3} \text{ are in AP.}$$

$$\Rightarrow \quad \frac{s-a}{\Delta}, \frac{s-b}{\Delta}, \frac{s-c}{\Delta} \text{ are in AP.}$$

$$\Rightarrow \quad s-a, s-b, s-c \text{ are in AP.}$$

$$\Rightarrow \quad -a, -b, -c \text{ are in AP.}$$

$$\Rightarrow \quad a, b, c \text{ are in AP.}$$