

$$\sum \left\{ a^{\frac{1}{n}} - \left(\frac{b^{\frac{1}{n}} + c^{\frac{1}{n}}}{2} \right) \right\}$$

is convergent

then by necessary condition
of convergent series

$$\lim_{n \rightarrow \infty} \left\{ a^{\frac{1}{n}} - \left(\frac{b^{\frac{1}{n}} + c^{\frac{1}{n}}}{2} \right) \right\} \rightarrow 0$$

Since A.M $\geq$ G.M

$$\frac{b^{\frac{1}{n}} + c^{\frac{1}{n}}}{2} \geq \sqrt{b^{\frac{1}{n}} c^{\frac{1}{n}}}$$

" $(bc)^{\frac{1}{2n}}$

$$\lim_{n \rightarrow \infty} a^{\frac{1}{n}} - (bc)^{\frac{1}{2n}} = 0$$

$$\Rightarrow a^{\frac{1}{n}} = (bc)^{\frac{1}{2n}}$$

$$\Rightarrow \boxed{a = \sqrt{bc}}$$