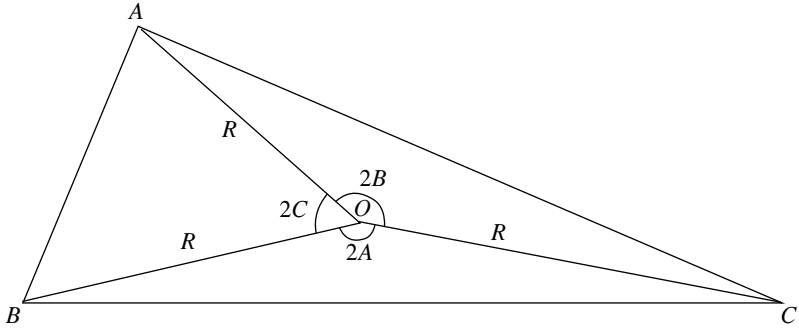
102.41 Proof without Words: $\sin 2A + \sin 2B + \sin 2C = 4 \sin A \sin B \sin C$ (where $A + B + C = \pi$)



For ΔABC, with circumcentre O and circumradius R,

$$\tfrac{1}{2}R^2 \sin 2A + \tfrac{1}{2}R^2 \sin 2B + \tfrac{1}{2}R^2 \sin 2C = \text{area}\left(\Delta ABC\right) = \tfrac{1}{2}ab \sin C$$

$$\Rightarrow \sin 2A + \sin 2B + \sin 2C = \frac{a}{R} \cdot \frac{b}{R} \sin C = 4 \sin A \cdot \sin B \cdot \sin C.$$

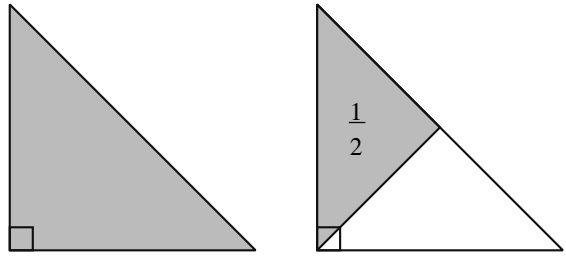
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102.42 Proof without Words: An alternating geometrical series

Here we propose a visual proof for the sum of an alternating geometrical series,

$$\sum_{n=0}^{\infty} \left(-\frac{1}{2}\right)^n = \frac{2}{3}.$$



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