

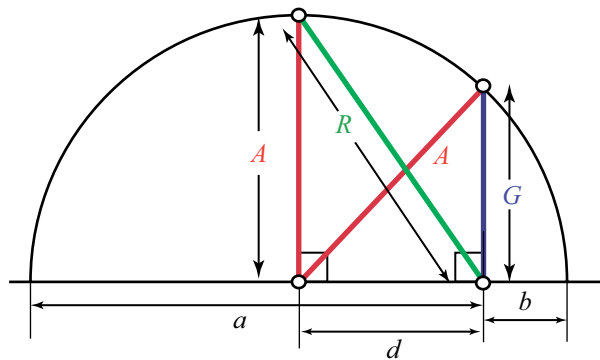
## Proof Without Words: Arithmetic Mean of Two Means

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**Theorem.** Given two positive numbers  $a$  and  $b$ , let  $A$ ,  $G$ , and  $R$  denote their arithmetic mean, geometric mean, and root mean square, respectively. It follows that

$$A \geq \frac{R + G}{2}.$$

*Proof.*



$$d^2 = A^2 - G^2 = R^2 - A^2$$

$$A = \sqrt{\frac{R^2 + G^2}{2}} \geq \frac{R + G}{2}$$

**Summary.** We provide a visual proof that the arithmetic mean of two positive numbers is greater or equal than the arithmetic mean of the geometric mean and the root mean square.

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