

# My greatest paper so far

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August 25, 2020

## 1 Interesting formulae

### 1.1 Old stuff

We present a few gems of mathematics.

- The following famous formula is attributed to Leonhard Euler (1707–1783):

$$\left(\int_{2^7}^9 (e^{i\pi} + 1) dx\right)^2 = 0. \quad (1)$$

- The Arithmetic-Geometric Mean formula:

$$\frac{a_1 + \cdots + a_n}{n} = \frac{1}{n} \sum_{i=1}^n a_i \geq (a_1 a_2 \cdots a_n)^{1/n}.$$

Note that Equation 1 is a special case of Euler’s more general formula [1]

$$\exp(i\theta) = \cos(\theta) + i \sin(\theta).$$

### A note on history

I make no claim to the historical accuracy of any comments in this article — everything here is based on what I read in Wikipedia.

## 2 Definitions

We present some (not all correct) definitions from undergraduate courses.

- (i) A group  $(G, \star)$  is said to be *abelian* if for all  $x \in G$  and all  $y \in G$ ,  $x \star y = y \star x$ .
- (ii) A *graph* consists of a finite set  $V$  together with a set  $E \subseteq V \times V$ . The elements of  $V$  are called *vertices*; the elements of  $E$  are called *edges*.
- (iii) A set  $\{a_1, a_2, \dots, a_n\}$  is *ugly* if all elements are cyan.

### 3 Conclusion

In Sections 1.1 and 2 we saw some really well-known material. In future, we will write about something more cutting-edge.

### References

- [1] Dunham, William, ed. *The genius of Euler: reflections on his life and work*. Mathematical Association of America, 2007.