The Wonder That Is Pi

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This is a sequel to the blog "The Pi of Archimedes". Here, we look at π as a number—without explicit reference to its geometric tethering—and explore its remarkable ubiquity in mathematics. As an appetizer, see Figure 1, where the symbol for Pi is surmounted by two very different equations defining it. How in all the world could these two equations be true? And yet, here indeed are they.

$$\pi = 4\left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots\right)$$

$$\frac{1}{\pi} = \frac{\sqrt{8}}{9801} \sum_{n=0}^{\infty} \frac{(4n)!\,[1103 + 26390n]}{(n!)^4 396^{4n}}$$

Figure 1: Pi expressed by two very different equations.

Introduction

Acknowledgements

Feedback

Please email me your comments and corrections.