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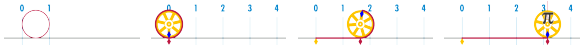

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The number π is approximately 3: $\pi = 3.141\ldots$ A good **approximation** is $\pi \approx 22/7$, and an even better one is $\pi \approx 355/113$. These are obtained by truncating the **continued fraction expansion** of π. The symbol is a letter from the Greek alphabet and is pronounced like "pie". Each year on the 14th of March, fans celebrate the international π day. Starting at the 762nd decimal place, **six nines** occur in the digits of π. The **circumference** of a circle with radius r is $2\pi r$. Its **area** is πr^2. The **volume** of a sphere with radius r is $\frac{4}{3}\pi r^3$. The number π is **irrational**, so not equal to any quotient of integers; furthermore, it is **transcendent**, so not a solution of any polynomial equation. **Open question:** Do the ten digits occur equally often in the decimal expansion of π?

$$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \ldots = \frac{\pi}{4} \qquad 0 = e^{i\pi} + 1 \qquad \pi = \int_{-\infty}^{\infty} \frac{dx}{1+x^2}$$

$$\frac{2}{1} \cdot \frac{2}{3} \cdot \frac{4}{3} \cdot \frac{4}{5} \cdot \frac{6}{5} \cdot \frac{6}{7} \cdot \frac{8}{7} \cdot \frac{8}{9} \cdot \ldots = \frac{\pi}{2} \qquad \chi(M) = \frac{1}{2\pi} \int_M K\, dA \qquad f(z) = \frac{1}{2\pi i} \oint \frac{f(\zeta)}{\zeta - z}\, d\zeta$$

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