Bernoulli Numbers

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Abstract

Bernoulli numbers are likely the second most fascinating number sequence after the prime numbers. Perhaps you have heard about how Jacob Bernoulli used these numbers to calculate the sum of the first thousand 10th powers in less than 8 minutes. Or perhaps you have seen them lurking in the Taylor series of common trigonometric functions. The truth is that these numbers appear everywhere in mathematics including everything from the Riemann Zeta function to numerical integration. This talk aims to give an introduction to these puzzling numbers, their many properties and how they relate.

Prerequisites: Taylor series

n	0	1	2	3	4	5	6	7	8	9
B_n	1	$\frac{1}{2}$	$\frac{1}{6}$	0	$-\frac{1}{30}$	0	$\frac{1}{42}$	0	$-\frac{1}{30}$	0
n	10	11	12	13	14	15	16	17	18	19
B_n	$\frac{5}{66}$	0	$-\frac{691}{2730}$	0	$\frac{7}{6}$	0	$-\frac{3617}{510}$	0	$\frac{43867}{798}$	0