

How Odd are Odd Perfect Numbers?

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Greek mathematicians defined a whole number to be *perfect* if it is the sum of its proper divisors, where “proper” means the divisor is smaller than the number itself. An example is 6, because the sum of its proper divisors is $1 + 2 + 3 = 6$. Since classical times, 51 perfect numbers have been found ... and every one of them is even.

That raises an obvious question: are there any odd perfect numbers? To date, no one knows the answer. It is one of the true mysteries of mathematics.

In this DMC talk, we trace the history of perfect numbers. This will lead us to an 1888 argument in which J. J. Sylvester proved that, if an odd perfect number *does* exist, then it must have at least three different prime factors. Although this property is far from self-evident, Sylvester’s elegant proof requires nothing more sophisticated than geometric series.

So, we’ll see a bit of history and a bit of mathematics as we dabble in the challenging realm of number theory.

Date: Tuesday October 1

Time: 7:00 pm

Place: Park 338