

Primeor(d)ial Soup: The Hunt for Large Primes

$$2^2-1 = 3$$

$$2^3-1 = 7$$

$$2^5-1 = 31$$

$$2^7-1 = 127$$

$$2^{13}-1 = 8,191$$

$$2^{17}-1 = 131,071$$

$$2^{19}-1 = 524,287$$

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Why do mathematicians look for primes? Are all primes created equal or are some primes more special than others somehow? The answer to the second question is a qualified yes. One type of special prime, called a Mersenne prime, consists of primes of the form:

$$2^n - 1.$$

One reason that Mersenne primes are special is due to nicer-than-average ways of testing their primality. As a result, the largest known prime numbers have almost always been Mersenne primes (with the few known counterexamples coming from very closely related numbers!) This talk will cover a whirlwind history of the prime numbers, the search for large primes and adventures in primality testing.

Finally, how can YOU get involved in the search for large (titanic!) primes and how can you win up to \$50,000 doing it? Come to find out!

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