Mersenne numbers

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Abstract. Numbers of the form $2^n - 1$, known as Mersenne numbers, have been studied since antiquity. By far the most well-known problem in this area is the question of prime Mersenne numbers. It is thought that there are infinitely many, the search for examples being the topic of a popular collaborative website. However, there are many less famous problems connected with Mersenne numbers. For example, what is the largest prime factor of $2^n - 1$? For all we know, this might be equal to $2n+1$ infinitely often, a seemingly absurd prospect. This talk will present a summary of some known problems and results, and also present some new theorems, most of which are conditional on the generalized Riemann hypothesis. (Joint work with Leo Murata.)