Name: _____

Read and take notes on Sections 9.1: Fermat's Little Theorem, 9.2: Factoring Special Expressions, 9.3: Mersenne Numbers, and 9.4 More Examples.

Reading Questions

1. What kind of factorizations does Fermat's Little Theorem allow us to speed up?

2. (a) Consider $N = 3^{14} - 1 = 4\,782\,968$. According to the corollary in Section 9.2, we do not need to check *all* primes less than $\sqrt{N}$ to find the prime factors of N. Which primes should we check?

   (b) Factor N by hand, or at least without using anything more than a scientific calculator.

   (Hint: Start by factoring out as many 2s as possible. Then look at the conditions in (a). Also, take a look at the example in Section 9.4 on factoring $3^7 - 1$.)

3. What struck you in this reading? What is still unclear? What remaining questions do you have?