

This problem sheet is about difficult computational problems [1].

1. Write a Racket function that decides PRIMES.
2. Write a Java function that decides PRIMES.
3. Explain what is meant by SUBSETSUM, and the decision problem related to it.
4. Write a function in Racket that decides SUBSETSUM.
5. Write a function in Java that decides SUBSETSUM.
6. Explain the integer factorisation problem and why it is important in modern cryptography.
7. Explain what is meant by SAT.
8. Explain the 3-SAT decision problem.

**References**

- [1] Michael Sipser. *Introduction to the Theory of Computation*. International Thomson Publishing, 3rd edition, 1996.