

Manipulation of lists.

- (1.1) Given $n \in \mathbb{N}$, make a list of the first n primes.
- (1.2) Produce a graph of the list of primes up to n . Color them blue if $p \equiv 1 \pmod{4}$ and red if $p \equiv 3 \pmod{4}$.
- (1.3) Given a number $n \in \mathbb{N}$, make a list of the binomial coefficients $\binom{n}{k}$, with $0 \leq k \leq n$. Produce an array with a black dot if $\binom{n}{k}$ is even and a red one if it is odd.
- (1.4) Given a list of positive numbers $\{a_n : 0 \leq n \leq m\}$ compute the numbers of times the function $a_j - a_{j-1}$ changes sign. For example, if the sequence is increasing this number must be 0. A sequence is called *unimodal* if this number is 1.