1. Show the function $F: \mathbb{Q} \to \mathbb{Q}$ defined by $F(x) = 3x + 7$ is a bijection.
2. Which binary string of 1110001110, 1100110010, 0000011111, and 1010101010 has minimum Hamming distance from 110011000?
3. Given SUB has complexity \( n^2 + 5 \), what is the complexity of the procedure FOO given as:

```plaintext
PROCEDURE FOO(a, n: integers)

VAL := a

FOR I = 1 TO n

    VAL := VAL + SUB(a)
    a := a + 1

NEXT I

OUTPUT(VAL)
```
4. Find the best Big-Oh bound for the algorithm with complexity \((n^3 + n + 3)(n^4 + n^3 + 6n)\).
5. Prove that the difference of the squares of successive integers is odd.
6. Prove there is no largest prime number.