

# TP 1 - Exercices pratiques

Cédric Evrard

September 20, 2019

## 1 Notation Mathématique

### Question 1

1.  $I = \{1, 2, 3, 4\}$
2.  $J = \{1, 2, 3\}$
3.  $K = \{1, 2, 3, 4, 5\}$
4.  $K = \{1, 76, 2, 5, -1\}$

### Question 2

1.  $A = \{4, 6, 7, 8\}$
2.  $B = \{(0, 0), (0, 5), (0, 7), (1, 1), (1, 6), (2, 2), (8, 2), (9, 1), (9, 7)\}$
3.  $C = \{0, 1, 2, 8, 9\}$
4.  $D = \{(1, 2, 3), (2, 3, 76), (3, 76, 27), (76, 27, 1), (27, 1, 2), (1, 2, 1)\}$

### Question 3

1.  $\forall i : 0 \leq i < n : a[i] = 0$
2.  $\forall i, \forall j : 0 \leq i, j < n : a[i] \neq a[j]$
3.  $\forall i : 0 \leq i < n : a[i] \bmod 2 = 0$
4.  $\exists i : 0 \leq i < n : a[i] = 0$
5.  $\forall i : 0 \leq i < n : a[i] \bmod 2 = 0 \Rightarrow a[i] < 10$
6.  $\forall i : 0 \leq i < n : a[i] \bmod 2 = 0 \Rightarrow i \bmod 2 = 0$

7.  $\forall i, \forall j : 0 \leq i < j < 0 : a[i] \leq a[j]$

**Question 4**

1.  $\forall i : \exists x : 0 \leq i < n : x \leq a[i]$

2.  $\{a[i] \mid 0 \leq i < n\} \subseteq \{b[j] \mid 0 \leq j < m\}$

3.  $\{a[i] \mid 0 \leq i < n\} \cap \{b[j] \mid 0 \leq j < m\} = \emptyset$

4.  $\{a[i] \mid 0 \leq i < n\} \setminus \{b[j] \mid 0 \leq j < m\} \neq \emptyset$

5.  $\#\{a[i] \mid 0 \leq i < n\} \leq 5$