# IHDCB331 - Algorithmique II

TP 1 - Exercices pratiques

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## 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.  $\forall i : 0 \le i < n : a[i] = 0$
- 2.  $\forall i, \forall j : 0 \le i, j < 0 : a[i] \ne a[j]$
- 3.  $\forall i : 0 \le i < n : a[i] \mod 2 = 0$
- 4.  $\exists i : 0 \le i < n : a[i] = 0$
- 5.  $\forall i : 0 \le i < n : a[i] \mod 2 = 0 \Rightarrow a[i] < 10$

6. 
$$\forall i : 0 \leq i < n : a[i] \mod 2 = 0 \Rightarrow i \mod 2 = 0$$

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

# Question 4

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

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

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

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

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