

Last name	
First name	
Group	
Tutorial Teacher	

Grade	
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Algorithmics
Undergraduate 2nd year - S3
Midterm #3 (C3)
November 2019
Answer Sheets

1	
2	
3	
4	

Answers 1 (Axes and graphs... – 5 points)

1. Give two indirect methods of hashing:

2. The collision resolution method with which secondary collisions appear is:

3. A secondary collision is:

4. The order of a digraph is:

5. A zero degree vertex is called:

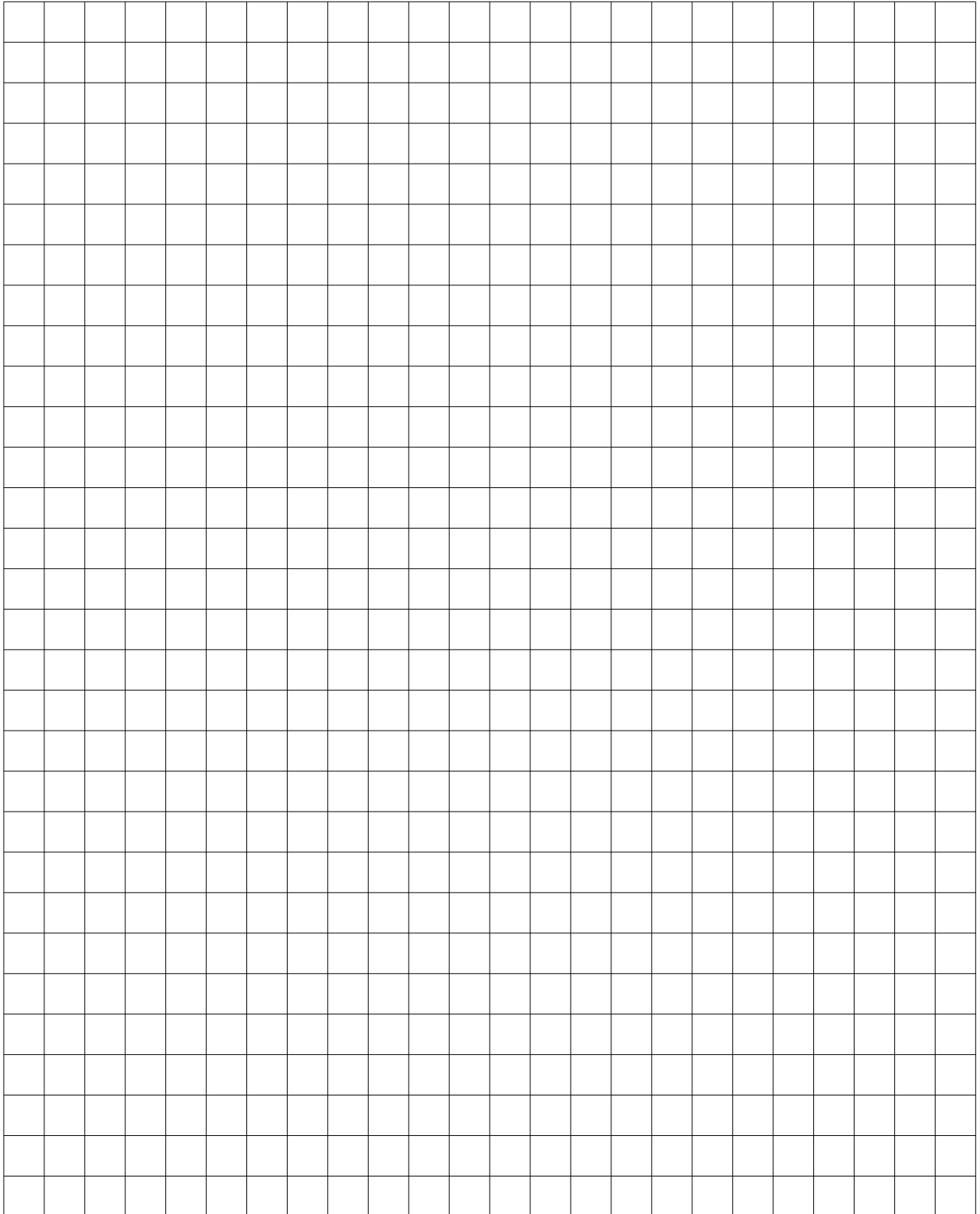
6. If they exist, the vertices of G which have an outdegree equal to 0 are:

7. If they exist, the vertices of G which have an indegree equal to 1 are:

Answers 2 (Average Arity of a General Tree – 5 points)

Specifications:

The function `averageArity(T)` returns the average arity of the general tree T (`TreeAsBin`) if $size(T) > 1$, otherwise 0.



Answers 3 (B-trees: Insertions – 8 points)

1. *Insertion of keys 36 and 42:*

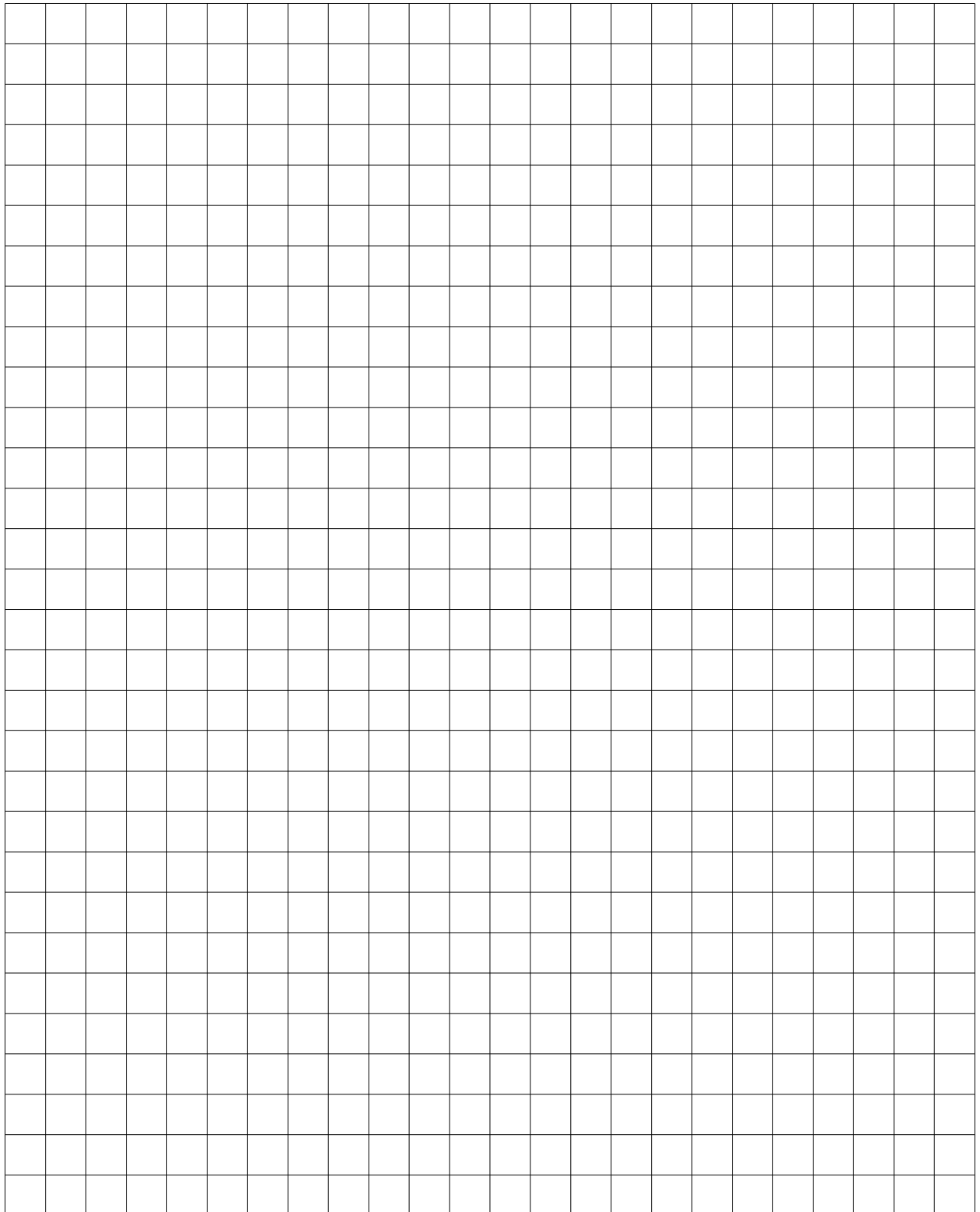
After insertion of 36

After insertion of 42

2. Specifications:

The function `insert_rec (x, B)` inserts the key x in the B-tree B , unless x is already in the tree. B is nonempty, and its root is not a full node (not a $2t$ -node). It returns a boolean that tells if the insertion occurred.

(Function to write next page...)



Answers 4 (B-Trees and Mystery – 2 points)

Parameters given to build:

• nodes = _____

• degree = _____