Last name			
First name	Grade		
Group			
		1	
$egin{aligned} & ext{Algorithmics} \ & ext{Undergraduate} \ & ext{1}^{st} \ ext{year} \ & ext{S2} \end{aligned}$		2	
Final Exam #2 (P2)		3	
${\it 30~May~2018-14:00} \ {\bf Answer~Sheets}$		4	
		5	
$Answers \ 1 \ ({ m AVL} - 3 \ points)$			
Final AVL:		Rotati	ons:

1.	Graphical representation of A_5 :	
		\
		/

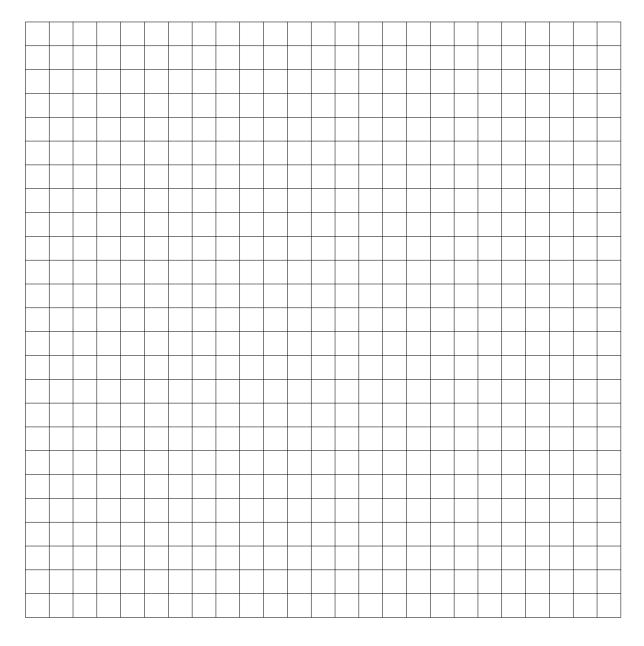
2. (a) h_n	=		
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(b) Prove that the tree A_n is height-balanced.

 ${\it Answers} \,\, 3 \,\,\, ({\tt List} \,
ightarrow \, {\tt AVL} - {\it 5 \,\, points})$

Specifications:

The function list2avl(L) returns an A.-V.L. (class AVL) built from the list L sorted in strictly increasing order.

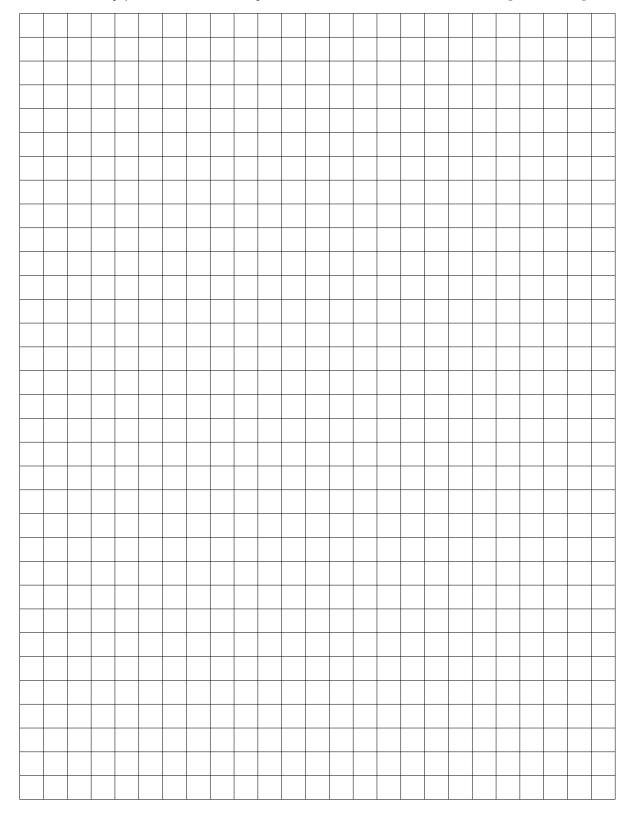


Answers 4 (AVL - Minimum deletion - 6 points)

1. Rotations and height changes after minimum deletion:

bal(root)	$bal(right\ child)$	rotation	$\Delta \mathbf{h}$
	-1		
-2	0		
	1		

2. **Specifications:** The function del_min_avl (A) deletes the node containing the minimum value of the non-empty AVL A. It returns a pair: the new tree and a boolean = tree height has changed.



Answers 5 (BST and mystery - 4 points)

1. Returned results?	
(a) call(25, B_1):	
(b) call(21, B_1):	
(c) call(20, B_1):	
(d) call(9, B_1):	
(e) call(53, B_1):	

2. $bst_mystery(x, B)$ (B any BST, with distinct elements).

At the end of part 1:

(a) What does B represent?

(b)	What does P represent?

What does call (x, B) do?						

