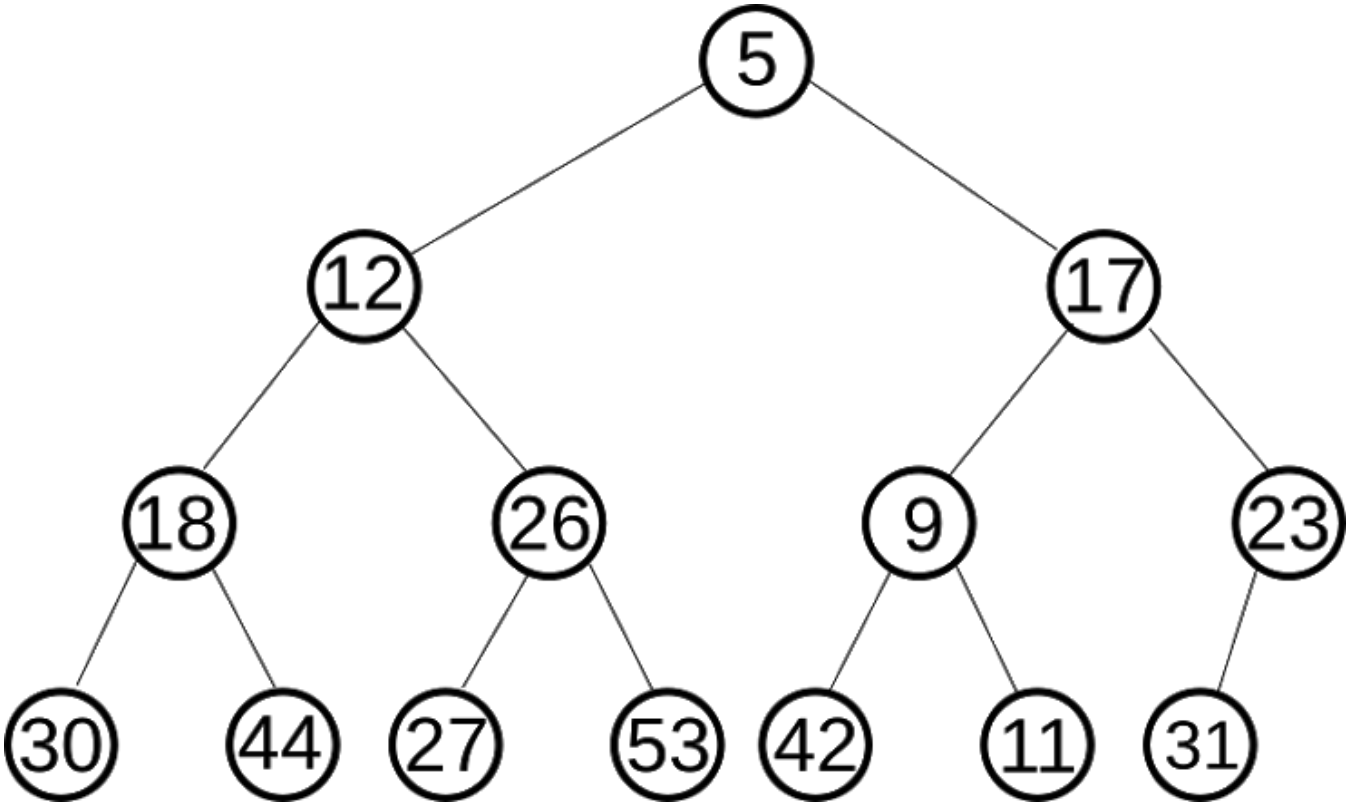
You are allowed to call Heapify exactly once on the structure below. On which node will you call Heapify so that we obtain a min-heap?



- ○ 5
- ◉ 17
- ○ 26
- ○ 9

In a BTree with degree t, the number of keys (values) in every non-root node is

- ( ) At least t-1, and at most 2t
- ( ) At least 1, and at most 2t-1
- ( ) At least t-1, and at most 2(t-1)
- (•) At least t-1, and at most 2t-1

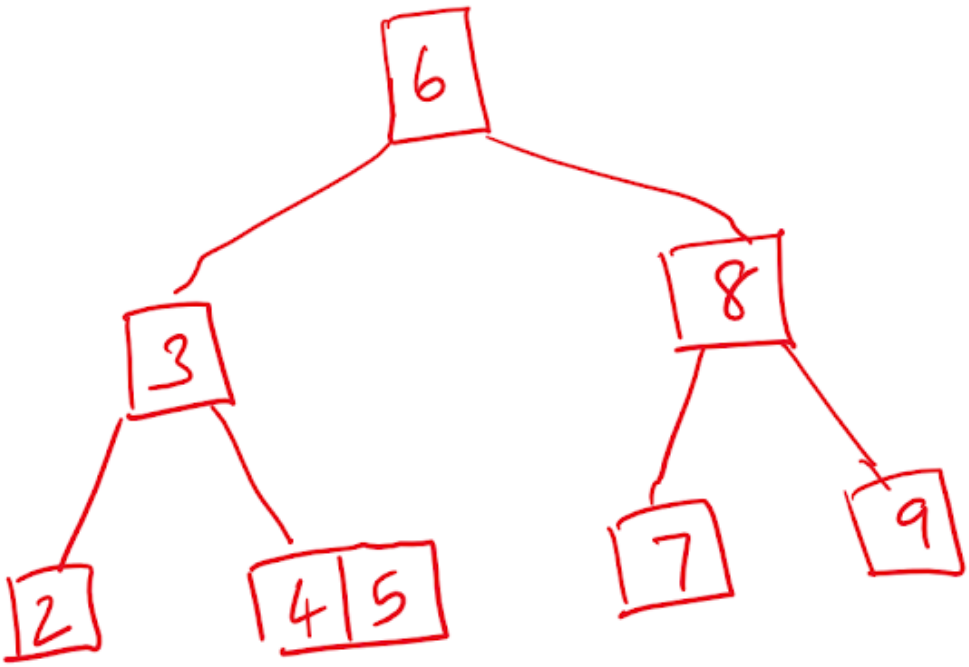
A B-tree of degree t and height h maintains which of the following properties? Mark all the correct choices.

- [x] All leaves are the same height
- [ ] The number of nodes is Θ(t^h)
- [x] The number of elements stored is at least 2t^h − 1
- [x] Elements in each node are in sorted order and the children follow the generalized BST property

Suppose we have the set of elements {1, 2, 3, 4} in randomly permuted order. What is the probability that if we insert it into an empty binary tree in the random order, the resulting tree has the maximum height possible?

- ( ) 1/24
- (•) 1/12
- ( ) 1/6
- ( ) 1/4
- ( ) 1/3

Which of the following statements is TRUE about the below (2,3,4)-tree? Assume the delete operation is performed as described in the NPTEL lecture (without preemptive merge).



- ○ Regardless of whichever element is deleted from the tree, the height of the tree does not change.
- ○ Regardless of whichever element is deleted from the tree, the height of the tree changes.
- ○ Depending on the element to be deleted, the tree may becomes unbalanced.
- ◉ Depending on the element to be deleted, the height of the tree may or may not change.

How many distinct min-heaps can be constructed with the elements {1, 2, 3, 4, 5}? (write only the number as answer without any space or punctuation)

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