

Difficulty: 0/4 **Interest:** 1/4

Consider labeled rooted trees where the sum of the labels of the branches connected to a vertex is less than the parent label, and the “top” label is n .

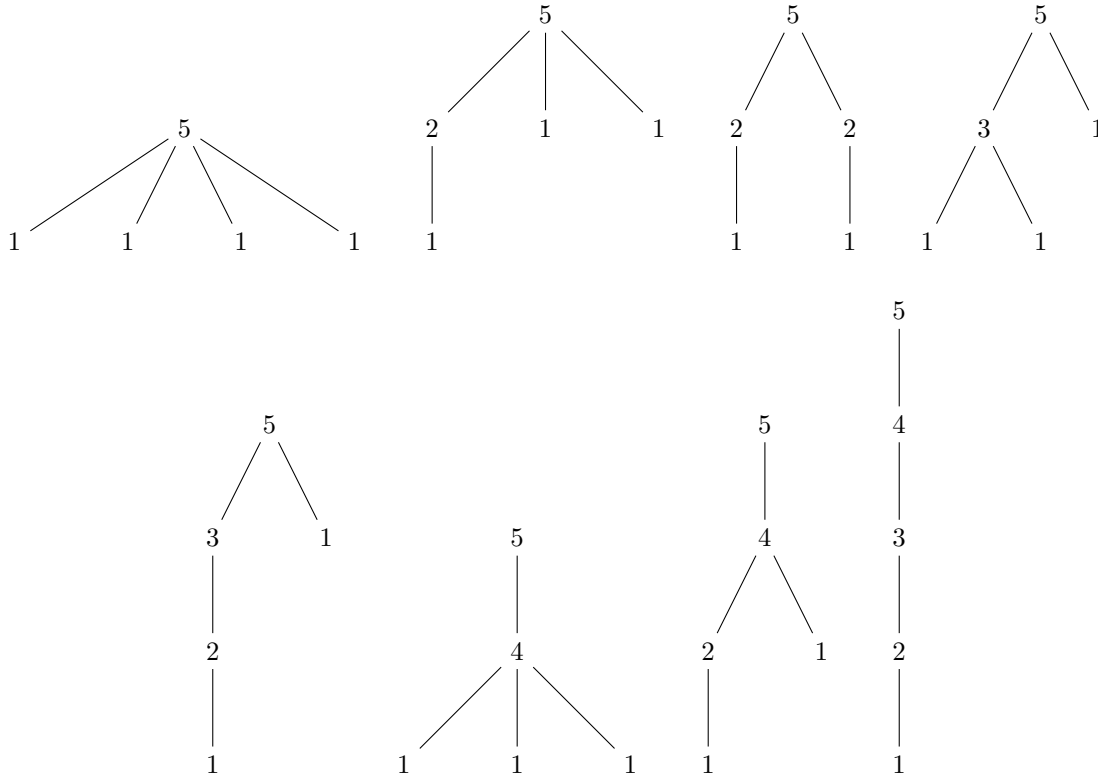


Figure 1: Eight examples of trees with a greatest label of 5: $a(5) = a(1)^4 + a(2)a(1)^2 + a(2)^2 + a(3)a(1) + a(4) = 8$

Question. How many such labels exist?

Related.

1. What if the same label cannot appear multiple times in the same row?
2. What if labels are strictly greater than 1 and the *product* of the branches is less than their parent?

References.

<https://oeis.org/A196545>