

High School Math Problems  
2017  
Week 9  
Problem

For  $n \in \mathbb{N}$  let  $A_n = \sqrt{2 + \underbrace{\sqrt{2 + \cdots + \sqrt{2}}}_{n \text{ radicals}}}$ .

Prove that for every  $n \in \mathbb{N}$

$$\frac{2 - A_n}{2 - A_{n-1}} > \frac{1}{4}.$$