1. We initiate an induction on $n \in \mathbb{N}$.
2. Note that $a_{n+1} = \left(1 + \frac{1}{n+1}\right)^{\frac{n+1}{n} \cdot n}$. By (1), (in rational case) $a_{n+1} \geq \left(1 + \frac{1}{n}\right)^n = a_n$.
3. $b_n = \left(1 + \frac{1}{n}\right)^{\frac{n}{n+1} \cdot \frac{(n+1)^2}{n}} \geq \left(1 + \frac{1}{n+1}\right)^{\frac{(n+1)^2}{n}} \geq \left(1 + \frac{1}{n+1}\right)^{n+2} = b_{n+1}$
4. Easy to prove $\forall k \in \mathbb{N}, b_k \geq a_k$, by (2) and (3),....