

Extreme Problem 10

The numbers $f(r)$ satisfy $f(r) > f(r+1)$ for $r = 1, 2, 3, \dots$. Show that, for any non-negative integer n ,

$$k^n(n-1)f(k^{n+1}) < \sum_{r=k^n}^{k^{n+1}-1} f(r) < k^n(n-1)f(k^n)$$