Generalized 42) In an *elegant way (!)*, prove that the newton method for equation $x^k - p = 0$ with $k \in \mathbf{N}$, $k \geq 2$, $p > 0$ converges for every starting point $x_0 > 0$.

Hint: Jensen's inequality for $f(x) = a^x$, $a > 0$.