1. Show that if $0 < r < s$ then $\lim_{n\to\infty} n\left(\frac{r}{s}\right)^n = 0$

2. Show if $\sum_{k=0}^{\infty} a_k(x-x_0)^k$ has radius of convergence R then so does $\sum_{k=0}^{\infty} \frac{a_k}{k+1}(x-x_0)^{k+1}$ and $\sum_{k=0}^{\infty} k a_k(x-x_0)^{k-1}$.

   Hint: we showed that the later two series had radius of convergence at least R.