

Recall from 11/18 in-class $h_n(x) = x^{1+\frac{1}{2n-1}} = x \left(x^{\frac{1}{2n-1}} \right)$

1. Look back at your notes. What is $h(x) = \lim_{n \rightarrow \infty} h_n(x)$?
2. Find the sequence (h'_n)
3. Find $\lim_{n \rightarrow \infty} h'_n(x)$
4. Show that (h'_n) does not converge uniformly on $[-1, 1]$.

Hint: Consider $\epsilon_0 = \frac{1}{2}$ and use continuity of h'_n at 0 to show there exists $x > 0$ such that $h'_n(x) < \frac{1}{2}$