

Problems for lecture 28

March 30, 2015

1. Suppose that we have two uniformly convergent sequences of functions $f_n \implies f$ and $g_n \implies g$ on a set A . Show that the sequence of functions $f_n + g_n$ converges uniformly to the function $f + g$. Hint: Use the definition and the triangle inequality.
2. Suppose there are two numbers K, L , so that $K > |f_n(x)|$ and $L > |g_n(x)|$ for all $n \in \mathbb{N}$ and all $x \in A$. Show that if f_n and g_n converge uniformly to the functions f and g respectively then the sequence of functions $f_n \cdot g_n$ converges uniformly to the function $f \cdot g$ on A . Hint: Use the definition and the triangle inequality.