Math 131
Homework 5
3/6/17

1, 2, 3

(1) Prove that the sequence $\{p_n\}$ converges to p if and only if every subsequence of $\{p_n\}$ converges to p. (See Rudin, p. 51.)

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(2) Let $\{x_n\}$ and $\{s_n\}$ be sequences in $\mathbb{R}$. Suppose $0 \leq x_n \leq s_n$ for $n \geq N$, where N is some fixed number. Prove that if $s_n \to 0$, then $x_n \to 0$. (See Rudin, p. 57.)

$\blacksquare$

(3) Let x be a real number such that $|x| < 1$. Prove that if $|x^n| \to 0$, then $x^n \to 0$. (We used this fact in our proof of part (e) of Theorem 3.20.)

$\blacksquare$