

Assignment 9

Mandatory questions to be answered orally

1. Exercise 9.4 from the yellow book.
2. Exercise 9.6 from the yellow book.
3. Exercise 9.10 from the yellow book.
4. Exercise 9.12 from the yellow book.
5. Exercise 9.18 from the yellow book.
6. The sequence a_1, a_1, \dots is given by $a_1 = 1$ and the recursion formula $a_{n+1} = 1 + 1/a_n$. Assuming that a limit $a = \lim_{n \rightarrow \infty} a_n$ exists, find its value.

Mandatory question to be answered in writing

1. Show that if $z_n = (a^n + b^n)^{1/n}$ where $0 < a < b$ then $\lim_{n \rightarrow \infty} z_n = b$. (Hint: Show that $b < z_n < 2^{1/n}b$. You are allowed to assume that $\lim_{n \rightarrow \infty} x_n = 0$ implies $\lim_{n \rightarrow \infty} 2^{x_n} = 1$.)