

Homework #17.

• Read pp. 66 - 76.

- Need to know: Definition of Cauchy sequence.
Statement and proof of Cauchy criterion.
Statement and proof of Cauchy criterion for series.

Do the following problems:

1. Use only the definition of Cauchy sequence to prove that

a) $a_n = \sin\left(\frac{n\pi}{6}\right)$, $n \in \mathbb{N}$ is not Cauchy.

(b) $b_n = \frac{(-1)^n}{n^2}$, $n \in \mathbb{N}$ is Cauchy.

2. Suppose that (c_n) is a sequence such that $|c_{n+1} - c_n| < \left(\frac{2}{3}\right)^n \forall n \in \mathbb{N}$. Prove that sequence (c_n) is Cauchy.

3. Do # 2.6.2, 2.6.3(b), 2.7.1(c).
(In 2.7.1(c) just follow the steps from problem 4 of hwk 16).