MATH 173, FALL 2022, HOMEWORK #7

1. Problems not from the book

Problem: Let V be the set of sequences of real numbers $\{a_i\}_{i=1}^{\infty}$ such that

$$\sum_{i=1}^{\infty} a_i^4 < \infty.$$

i) Prove that V is a vector space over the real numbers.

ii) Prove that V is infinite dimensional.

iii) Construct a basis of V.

2. Problems from the book

Section 2.6, problems 1, 2, 3, 4, 5, 6, 7