

Math 136, Homework 12, due Friday May 1, 5pm.

The remainder of the course is devoted to Chapter 9 of Cutland, and material covered in the videos and the lecture notes at Bcourses . We are looking at ways of measuring complexity of predicates and functions which go beyond recursiveness and recursive enumerability. The videos on Bcourses as of 04/24 cover *relative computability* and *Turing degrees*. Next week we shall discuss the *arithmetical hierarchy*.

This homework is due one day later than usual.

Exercises due May 1:

From chapter 9: page 173, problems 1, 4, 6, 7, 8, 9, 10.

From lecture notes labelled "The arithmetic hierarchy": exercises 1 and 2.

Additional problem: Let $\text{Fin} = \{e \mid W_e \text{ is finite}\}$.

- (a) Show Fin is K -semidecidable.
- (b) Show Fin is not K -decidable. (Hint: one way is to show that it is Σ_2^0 -hard.)