

DM517 – Fall 2014 – Weekly Note 9

Stuff covered in week 45

The last part of Section 4.1 and most of Section 4.2

Key points

- A problem/language is said to be **undecidable** if no TM decides it.
- An example of an undecidable problem is the **Halting problem** which asks whether a program halts on a certain input. The Halting problem is recognizable, though since the universal Turing machine can be used to simulate a given TM on a given input and accept exactly those pairs $\langle M, w \rangle$ for which $w \in l(M)$.

Lecture November 10, 2014:

- The rest of Section 4.2.
- Section 5.1 pages 215-220.
- Notes on Undecidability from the coursepage.

Exercises November 12, 2014:

- 5.16 page 240.
- November 2012 Problems 5 and 6
- January 2009 Problem 6
- January 2008 Problem 5, except the second question.