

In-class Practice 23: Undecidability

State whether the following are true, false, or unknown.

1. The following is recursive: the set of all encodings of TMs that do not accept their own encoding.

False. S_{tm} is not even r.e.

2. The set of all Java programs is countable

True. Each can be expressed as a finite string.

3. The halting problem for PDAs is undecidable

False.

4. The set of all finite subsets of the reals is uncountable

True. The set of 1-element sets is already uncountable.

5. If L is the language of a nondeterministic TM, then there is a deterministic TM for L .

True. We showed how to do breadth-first-search of the computation tree.