

Lecture #19: Creative Sets, Simple Sets, and Limits

What Will Happen During the Lecture

Remember... You Had Homework!

Students were asked to have worked through a set of notes before this first lecture:

- Lecture Notes — “Creative Sets, Simple Sets, and Limits”

Of course, you may attend the lecture presentation if you have not worked through this material ahead of time — but it will not be repeated for you during the lecture presentation.

Topic To Be Discussed

The lecture notes introduced *productive sets*, *creative sets*, and *simple sets*.

Productive sets and *creative sets* have applications in mathematical logic (which will not be discussed in this course). They are needed to define *simple sets*, as well.

It is not, at all, trivial to show that simple sets even exist. The proof, of Post, of the existence of a simple set, is probably not of much independent interest — but working through of it is an exercise that involves concepts and techniques that are useful in this course.

As noted in the preparatory reading, the simple set that Post described can be used to answer a question that is closely *related* to Post’s problem: There exists a computably enumerable set that is not computable, but that is also not *m*-complete for the class of all computably enumerable sets.

As time permits, some or all of the Post’s proof of the existence of a simple set will be discussed.