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.