Due: Monday, Dec 5, beginning of lecture.

NOTE: Each problem set counts 10% of your mark, and it is important to do your own work. You may consult with others concerning the general approach for solving problems on assignments, but you must write up all solutions entirely on your own. Copying assignments is a serious academic offence and will be dealt with accordingly.

1. Let $A = \{ x \mid \text{dom}(\{x\}) \subseteq \text{PRIMES} \}$ where PRIMES is the set of prime numbers.
   
   Is $A$ r.e.? Is $A^c$ r.e.? Justify your answers. To show something is not r.e., use the special case of the S-m-n Theorem (page 73 of the NOTES).

2. Do Exercise 4, page 89/90 in the NOTES (but you may omit part a).

3. Do Exercise 2, page 98 of the NOTES. (Note the correction that $Th(s)$ is on page 51 of the NOTES, rather than on pages 49-50.)

4. Use the MAIN LEMMA to Prove Corollary 3, page 104 of the NOTES: The set of $\exists \Delta_0$ sentences of $\text{TA}$ is r.e., but not recursive.