

## Math260 - Introduction to Mathematical Logic

Fall 2007 – Winter 2008

Instructor: Sam Buss

### Homework #8. Due Thursday, March 6, 2008.

1. Prove that  $I\Sigma_1 \vdash I\Pi_1$ .
2. Prove that  $I\Sigma_1 \vdash L\Sigma_1$ . (“L” = Least number principle, or Minimization axioms.)
3. Prove that if  $T$  is axiomatizable, then  $T$  has a primitive recursive set of axioms.
4. Prove that if  $T$  has an r.e. set of axioms, then  $T$  has a recursive set of axioms. (That is, that  $T$  is axiomatizable.)

Suggestion: You may wish to combine problems 3 and 4 and just prove directly that if  $T$  has a r.e. set of axioms then  $T$  has a primitive recursive set of axioms.