

MCS 441 Theory of Computation
Problem Set 12

Due Wednesday December 1

Do the following problems from Sipser's *Theory of Computation*: 2.14, 4.3, 4.5, 5.2

- 1) Let $\text{EQ}_{\text{reg}} = \{(R_1, R_2) : R_1 \text{ and } R_2 \text{ are regular expressions and } L(R_1) = L(R_2)\}$. Prove that EQ_{reg} is decidable.
- 2) Prove that $\overline{\text{E}}_{\text{TM}}$ is Turing-recognizable (in other words E_{TM} is co-Turing-recognizable).