

Homework 3 – due Tuesday, Sept. 12

Show that the following languages over  $\{0, 1\}$  are not regular:

**Problem 1**  $\{0^n 1^m 0^n \mid n, m \geq 0\}$

**Problem 2**  $\{w \in \{0, 1\}^* \mid w = w^R\}$

**Problem 3**  $\{0^{n!} \mid n \geq 0\}$

**Problem 4**  $\{0^{p-1} \mid p \text{ is a prime}\}$

**Problem 5**  $\{0^n 1^m \mid n \neq m\}$