Homework 8

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Problem 1

Assume languages $L_1, L_2 \in NP \iff \exists$ deterministic TMs, $V_1(x, y)$ and $V_2(x, y)$, and polynomials p_1, p_2, q_1, q_2 such that
$\forall x, y$, V_1 runs in $p_1(|x|)$ time and V_2 runs in $p_2(|x|)$ time $\wedge$
$\forall x \in L, \exists y$ such that $|y| = q_1(|x|)$ for V_1 and $|y| = q_2(|x|)$ for $V_2 \wedge$

union

Proof. □

Problem 2

Problem 3