CSCI 301, Winter 2018
Math Exercises #5

YOUR NAME HERE

Due date: Monday, February 12, midnight.

1. Consider the relation $|$ (divides) on the set $\mathbb{Z}$.
   (a) Prove or disprove: $|$ is reflexive.
   (b) Prove or disprove: $|$ is symmetric.
   (c) Prove or disprove: $|$ is transitive.
2. Prove or disprove: If R and S are two equivalence relations on a set A, then $R \cup S$ is also an equivalence relation on A.
3. Consider the function $\theta : \{0, 1\} \times \mathbb{N} \to \mathbb{Z}$ defined as $\theta(a, b) = a - 2ab + b$
   (a) Prove or disprove: θ is injective.
   (b) Prove or disprove: θ is surjective.