Fall 2026, Math 296: Week 4 Preliminary Problems
Due: Thursday, September 17th, 2026
Proof Methods and Quantifiers

Preliminary problems. These problems should be completed before discussion on Thursday.

(P1) Write each of the following propositions as a full English sentence. Then, determine its truth value.

(i) $\forall x \in \mathbb{Z}, x > 0$.

(ii) $\exists x \in \mathbb{R}, \forall y \in \mathbb{Q}, x \neq y$.

(iii) $\forall x \in \mathbb{Z}, \exists y \in \mathbb{Z}, y^2 = x$