Worksheet 1
Due: Tuesday, January 20

Put full names of group members at the top in alphabetical order by first name. Person whose first name is *last* records the answers on this sheet.

True or false. Justify your answer.

1. $\forall x \in \mathbb{R}$, $\exists y \in \mathbb{R}$ such that $x^2 + x - y = 0$.

2. $\forall y \in \mathbb{R}$, $\exists x \in \mathbb{R}$ such that $x^2 + x - y = 0$.

3. $\forall x_1, x_2 \in \mathbb{R}$, if $x_1^2 + x_1 = x_2^2 + x_2$, then $x_1 = x_2$.

4. $\exists (u, v) \in \mathbb{R}^2$ such that $\forall (x, y) \in \mathbb{R}^2 \setminus \{(0, 0)\}$, $(x, y) \cdot (u, v) < 0$. ($\cdot$ means the dot product.)

5. $\forall (x, y) \in \mathbb{R}^2 \setminus \{(0, 0)\}$, $\exists (u, v) \in \mathbb{R}^2$ such that $(x, y) \cdot (u, v) < 0$.