

PROOF AND DISPROOF

Instructions. Determine whether each statement is true or false, then provide a proof or disproof.

1. $\forall x, y \in \mathbb{R}, (x + y)^2 = x^2 + y^2$

2. $\forall x, y \in \mathbb{R}, (x + y)^2 \neq x^2 + y^2$

3. Let $a, b \in \mathbb{Z}$. If $a|b^2$, then $a|b$.

4. Let A, B , and C be sets. If $C \subseteq B$, then $(A - B) \subseteq (A - C)$.