PROOF AND DISPROOF

1. Prove or disprove the statements:

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

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

2. Let $a, b \in \mathbb{Z}$. Prove or disprove the statement: $\boxed{\text{If } a|b^2, \text{ then } a|b.}$

Date: March 14, 2022.

3. Let A, B, and C be sets. Prove or disprove the statement: $\boxed{\text{If } C \subseteq B, \text{ then } (A - B) \subseteq (A - C).}$