PORTFOLIO PROOFS C

Instructions. Choose one of the following statements and determine if it is true or false. Use LaTeX to write your proof (or disproof) nicely. Drop your proof (both pdf and tex) in your OneDrive folder by the end of the day Wednesday, November 3.

1. There are integers m and n such that $m^2 + mn + n^2$ is a perfect square.

2. If $n \in \mathbb{N}$, then $11 \nmid (2^n - 1)$.

3. Suppose A, B, and C are sets. If $A \times C \subseteq B \times C$, then $A \subseteq B$.

4. For any sets A, B, and C, $(A \cap B) \times C = (A \times C) \cap (B \times C)$.

Date: October 28, 2021.