Homework 7
Due Date: January 31

Problem 14. Prove that for \( n \in \mathbb{Z} \), if \( n^2 \) is even then so is \( n \).

Problem 15. For \( a, b, c \in \mathbb{Z} \), show that if \( a \mid b \) and \( a \mid c \), then \( a \mid (bx + cy) \) for any \( x, y \in \mathbb{Z} \).

Problem 16. Prove that the previous statement is not an if and only if statement.

Problem 17. Let \( a, b, c \in \mathbb{Z} \). Show that if \( a \mid b \) and \( b \mid c \), then \( a \mid c \).