MHF 3202, Dr. Block, Problem Set 2, Spring 2020

1. Suppose that A, B, and C are sets. Prove that

$$(A \cup C) \subseteq (B \cup C)$$

   if and only if

$$(A - C) \subseteq (B - C).$$

2. Prove or disprove the following:

   If $a, b, c \in \mathbb{Z}$, then at least one of the three integers

$$b^2 - c^3, \ a^2 + b, \ c - a$$

   is even.