July 9 Discussion – Implication with quantifiers

- Here we will investigate more reasons for vacuous truth in implication statements. For more information, see page 82 of Epp (3rd edition, Section 2.1).

Consider the following statement:
“For all integers \( x \), if \( x \) is even, then \( x + 2 \) is even”

(a). Write the above statement using quantifiers.

(b). Intuitively, do you believe the statement to be true?

(c). Now assume that the implication in your answer to (a) is replaced with \( \equiv \) (where \( \equiv \) is defined as it was on the previous worksheet). Is the statement still true? Why or why not?