Mathematics 300 Homework, August 28, 2024.

Problem 1. Make a truth tables to prove the logical equivalences related to taking negations of statements.

$$\neg(P \wedge Q) \equiv \neg P \vee \neg Q$$
$$\neg(P \vee Q) \equiv \neg P \wedge \neg Q$$
$$\neg(P \to Q) \equiv P \wedge \neg Q$$

Problem 2. As practice in using the equivalences of previous problem, do Problem 3 on Page 49 of the text.

Problem 3. Do Problems 10 and 11 on Pages 50 and 51 of text.

Problem 4. Give the converse and contrapositive of the following statements.

(a) If n is even, it is the sum of two prime numbers.
(b) Differentiability implies continuity.