

HOMEWORK 2
MATH 3345 – AUTUMN 2022 – KUTLER

Please complete the following problems on your own paper. Solutions should be written clearly, legibly, and with appropriate style.

1. **[Falkner Section 2 Exercise 2]** Let P , Q and R be logical sentences. Prove the first Distributive Law

$$P \wedge (Q \vee R) \text{ is logically equivalent to } (P \wedge Q) \vee (P \wedge R)$$

in two ways:

- (a) By means of a truth table;
 - (b) By means of an explanation in words.
2. **[Falkner Section 2 Exercise 6]** Let P and Q be logical sentences. Use a truth table to prove that $\neg(P \Rightarrow Q)$ is logically equivalent to $P \wedge \neg Q$.