MA0301
ELEMENTARY DISCRETE MATHEMATICS
NTNU, SPRING 2021

Set 2

Exercise 1. *Verify the first Absorption Law by means of a truth table.*
(Note: The first Absorption Law is $p \vee (p \wedge q) \Leftrightarrow p$.)

Exercise 2. *Lewis, Zax: Exercise 9.4 b.*

Use the Laws of Logic to verify the statements in exercises 3 and 4:

Exercise 3. $(p \Rightarrow (q \vee r)) \equiv ((p \wedge \neg q) \Rightarrow r)$

Exercise 4. $(q \wedge p) \vee q \wedge \neg(\neg q \vee p) \equiv q \wedge \neg p.$

Exercise 5. *Lewis, Zax: Exercise 12.2.*

Exercise 6. *Lewis, Zax: Exercise 12.3 a,b,e.*

Exercise 7. *Negate and simplify $\forall x[p(x) \wedge q(x)]$.*

Exercise 8. *Negate and simplify $\exists x \forall y[p(y) \vee \neg q(x,y)]$.*