Homework 0

Exercises

1-7. From *Mathematical Reasoning: Writing and Proof* [1]:

- Section 2.1, # 2–3, 7
- Section 2.2, # 1, 3e–f, 4 (skip b), 7 10a–c

Next we consider the "**neither**" operator: $P \downarrow Q$ is true exactly when P and Q are both false.

8. Come up with an expression equivalent to $P \downarrow Q$ using the negation, conjunction, and/or disjunction operators.
9. Show that you can write expressions equivalent to $\neg P$, $P \wedge Q$, and $P \vee Q$ using only the $\downarrow$ operator.

Remark: You can show this by making educated guesses and checking truth tables, but once you figure out a formula for $\neg P$ in terms of $\downarrow$ you can use the predicate calculus (and previous solutions) to compute the other formulas outright.

References

[1] Ted Sundstrom. *Mathematical Reasoning: Writing and Proof.* Grand Valley State University Libraries, 3rd edition, 2020.