Math 301: Introduction to Proofs
Problem Set 1
due: February 4, 2019

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Read. Preface, Introduction, §1.1, §1.2, §1.3, §1.4

Exercises.
§1.2 | 3, 5(b), 6(b), 12, 15

Exercise 1. In this exercise we’ll learn about Pierce’s law, a curiosity of classical logic. Later we’ll revisit this in another guise, but for now we use the tools we know.

(a) Apply a DeMorgan law and a Double Negation law to reduce the expression
\[ \neg(\neg P \lor Q) \lor P \]

(b) Using truth tables, show that your reduced expression is logically equivalent to \( P \). Where did \( Q \) go?

Exercises.
§1.3 | 1, 4, 8

Exercises.
§1.4 | 6, 7, 8, 10

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