

Due Wed, May 7th, at 11:59pm on Gradescope

Please show your work. Where it makes sense, your solutions should be written in full sentences. Recall that proof-writing problems will be graded on correctness as well as clarity and exposition.

From Enderton:

1. p. 83, Exercise 13, 15
2. p. 88, Exercises 18, 19
3. p. 88, Exercises 26, 32
4. p. 101, Exercise 1, 6

Additional problems:

5. *Subtraction on the integers.*

- (a) Give a formula for subtraction on the integers: $[\langle m, n \rangle] -_{\mathbb{Z}} [\langle p, q \rangle] = ?$.
- (b) Show this operation is well-defined.
- (c) Show that subtraction is the inverse operation for addition: for all $a, b \in \mathbb{Z}$,

$$(a -_{\mathbb{Z}} b) +_{\mathbb{Z}} b = a.$$

6. Using the previous exercise, complete Enderton Exercise 9 on p. 101.