

Honors Math A

Homework 1

A

Carefully read the course syllabus.

B

1. To turn in: Compute the truth table of $(P \vee Q) \wedge \sim (P \wedge Q)$. What binary operation does this formula model (i.e., how would you explain what it does in English)?

2. To turn in: Let $P(x, y)$ be the predicate “ x wrote y .” Interpret in English the following statements in predicate logic:

- a) $P(\text{Lewis Carroll}, \text{Alice in Wonderland})$
- b) $\exists x P(\text{Lewis Carroll}, x)$
- c) $\forall x (P(\text{Lewis Carroll}, x) \implies P(\text{Charles Dodgson}, x))$
- d) $\forall x P(\text{Lewis Carroll}, x) \implies \forall x P(\text{Charles Dodgson}, x)$
- e) $\forall x \exists y P(x, y)$
- f) $\exists x \forall y P(x, y)$

C

Print and read the article “Introduction to mathematical arguments” by Michael Hutchings, available on the course website. Do problems 1, 3, 5, 7, and 8 at the end of the article (on page 27) to turn in, and do the others for yourself.

D

Read pp. 1-15 in Apostol. From p. 16, do exercises 7c, 18, and 20 to turn in. Do exercises 9, 10, and 14 for yourself.