Logic & Proofs

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. (§1.1 Practice 1.4) Decide the truth or falsehood of each conditional statement.

   (a) $0 > 1 \rightarrow 2 + 2 = 3$

   (b) $0 > 1 \rightarrow 2 + 2 = 4$

   (c) $0 < 1 \rightarrow 2 + 2 = 3$

   (d) $0 < 1 \rightarrow 2 + 2 = 4$

2. (§1.2 Practice #1.9) What is the negation of the statement "It is spring break, and jaime is drinking tequila"?

3. (§1.3 Practice #1.12) What is the meaning of: $\exists n \in \mathbb{R}, \int x^n \, dx \neq \frac{x^{n+1}}{n+1} + C$?

4. (§1.3 Practice #1.14) What would we need to do to show that "$\exists n \in \mathbb{Z}, n^2$ is prime" is false?

   Origametry by Daniel Heath.

" 'You see, my dear Watson'-he propped his test-tube in the rack and began to lecture with the air of a professor addressing his class-'it is not really difficult to construct a series of inferences, each dependent upon its predecessor and each simple in itself. If, after doing so, one simply knocks out all the central inferences and presents one's audience with the starting-point and the conclusion, one may produce a startling, though possibly a meretricious, effect.' "

The Complete Sherlock Homes Treasury, by A.D. Doyle, Crown Publishers, 1976.