

Math 2283 - Honors Logic  
Spring 2020 - Journal Topics  
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2020.01.13 - Write a few paragraphs on what you think this course is supposed to be about, and what you hope to get out of it.

2020.01.18 - We have spent some time dealing with quantifiers (universal and existential), and how they bind variables. If all variables are bound, we get a sentence (instead of a sentential function). Generally speaking, English sentences are complete thoughts, and thus not in the form of sentential functions. One might think that the quantified sentences we have looked at so far in this class are silly and not something we encounter in real life. Furthermore, we discussed in class the challenge of converting everyday language into purely logical form. Your job in this journal entry is to come up with some everyday sentences that use quantified language, and attempt to convert them into logical sentences. As an example, this morning while waiting in line at the coffee shop, I thought to myself: ‘*There are at least a dozen people in here.*’. This can be rewritten in quantified logic form (which I will not write here, spoilers!). Pay attention to how often you use quantified statements over the next couple of days, and write down, if possible, approximately how many you use.

2020.01.22 - Start listening to for connectives in everyday conversations. How frequently are they used? How often are they interpreted as we have agreed to interpret them in class? Discuss any major interpretive differences if you encounter them!

2020.01.26 - Not all arguments we run across in every day life are valid, and some of them become rather prominent in culture. One such instance is the argument that Barack Obama was not eligible to be President of the United States because his father was not a US Citizen (the ‘birther’ conspiracy). A true statement regarding citizenship is as follows:

*If a child is born to parents who are American citizens, then said child is a natural-born American citizen.*

The argument that followed was that since Barack’s father was not an American citizen, Barack was not eligible to become President. What is wrong with this argument? State your answer in technical logical terms, and in a nice ‘*englishy*’ way. Next, do some *Google* searching and see what other example of bad arguments have made it into the public spotlight, and point out why they were wrong from a logical point of view.

2020.01.29 - So seriously, how was the proof working for you in class today? There were many steps so far, but was each step reasonable? Was the justification understandable? Take a look at the steps again, make sure you understand how each step works!

2020.02.01 - Explain the interplay between logical laws, tautologies, rules of inference, and assumptions. Which are distinct entities? How do they come together to form arguments? What would you define as an argument? Address these ideas in a paragraph or two (do not just simply answer each question in order...).

2020.02.06 - After the first two lectures of the week, we now know a little bit more about the logical idea of ‘identity’. Why do we need a logical definition of identity when we have a mathematical definition (i.e. the ‘=’ assignment between two objects)? Furthermore, does the logical definition of identity differ from how we use the concept of identity (equality) in every day life? Discuss this. Lastly, when introducing the *Rule of Substitution*, when we replace a sentential variable  $p$  by another sentential variable or function, say, for example,  $p \rightarrow q$ , I made the comment that the justification is  $p : p \rightarrow q$  and that we will avoid writing it as  $p = p \rightarrow q$ . Explain why this makes more sense now that we know about the logical theory of identity.

2020.02.10 - Are the steps in proofs making more sense? We did some long examples related to identity this last week. Are we getting more comfortable with the rules and how to use them? What about using instances of definitions and logical laws?

2020.02.13 - Start paying attention to how we categorize people, places, objects in every day language. Over the next week, compile a list of occasions in which objects were compared based on categories (i.e. person  $x$  and person  $y$  come from the same city, or object  $x$  can be bought from store  $K$  but not store  $L$  etc...).

2020.02.19 - So, how did your attempt at the proof of  $(K')' = K$  go?

2020.02.21 - Did spending a few days on the proofs in class help you understand the steps you need to take to prove something in a logically valid manner? How do you think you will do with the proof you were to have worked on for Monday?

2020.04.01 - It has been a while, between spring break, Corona, and going online, how are you doing? Are you having problems moving to an online format in any of your classes? This is not a logic-oriented journal entry, FYI. Also, you might want to type up your journal instead of writing them out by hand from here on out.

2020.04.07 - How are we feeling about the new deductive method approach where we have axioms and get to not break things down into purely logical form all the time. Is it easier or are we just getting confused?

2020.04.15 - Could you explain the process of arguing that you cannot prove a given statement in a deductive theory? Try to do it, convince me!