

Desired learning objectives for Math151:

1. You are able to read mathematical statements with comprehension.
2. You are able to express mathematical thoughts clearly.
3. You are able to reason logically.
4. You are able to detect flaws in logical arguments.
5. You are able to read and use definitions and theorems.
6. You are able to detect patterns and express them symbolically. For example, you are able to:
 - (a) identify the logical form of a statement,
 - (b) express new generalizations from a group of related examples, and
 - (c) evaluate compositions of functions.
7. You are able to use logical equivalences:
 - (a) to transform mathematical statements into equivalent forms, and
 - (b) to make decisions about the truth or falseness of a statement.
8. You are familiar with core mathematical terms and ideas (e.g. set, subset, less than, equal, equivalent, logically equivalent, function, definition, theorem, conjecture, counterexample, proof, variable, placeholder (dummy variable), unknown, parameter, pizza, tautology, contradiction, conditional statement, hypothesis, conclusion, negation, contrapositive (of what?), generalization, existence, intersection and union, absolute value, natural domain, extraneous solution, etc).
9. You are able to disprove false generalizations by demonstrating an appropriate counter-example.
10. You can appreciate the various levels of mathematical abstraction (see the beginning of section 4.2, for example).
11. You understand what constitutes mathematical proof, and can develop your own proofs of simple mathematical statements.