



## MAT 470 Milestone One Guidelines and Rubric

### Topic Selection

### Overview

The final project for this course is an oral defense of your mathematical proof. For this milestone, you will submit a one-page paper detailing the topic you selected for your final project. Your description should provide sufficient detail to show the appropriateness of the topic. Let your instructor know if you are using a format for the slides other than PowerPoint in this submission.

**NOTE:** The topic you choose should be intimately connected to the structure of real numbers, sequences, continuity, differentiation, and Riemann integration real numbers.

Use the following general topics to guide your more specific topic selection:

- Explain the process of constructing the real number system beginning with the natural numbers.
- Prove implications of axioms and properties of the real number system.
- Describe the concept of an ordered field as it applies to the real number system.
- Describe the idea of a limit of a function at a point.
- Determine whether a given function is continuous, discontinuous, or uniformly continuous.
- Explain the connection between the continuity of a function at a point and the function being differentiable at a point.
- Prove and apply the fundamental theorem of calculus in finding the value of specific Riemann integrals of functions.

Review this module's resources for a description of the components of a mathematical proof.

### Prompt

Specifically, you must address the following **critical elements**:

Provide a description of your selected topic, describing:

- The specific **topic** of the mathematical proof to be presented, including the appropriate axioms and theorems and which method of proof you may use (e.g., direct proof, proof by construction, proof by contradiction, proof by induction, etc.).
- An **analysis** of why this topic is appropriate for an oral defense of your mathematical proof; for example, can an appropriate level of detail be presented within 5–7 minutes to provide a clear, logical argument?

## What to Submit

Submit your paper as a one-page Microsoft Word document with double spacing, 12-point Times New Roman font, and one-inch margins. Sources should be cited according to APA style.

### Milestone One Rubric

Criteria	Proficient (100%)	Needs Improvement (55%)	Not Evident (0%)	Value
<b>Mathematical Topic</b>	Selects and comprehensively explains a topic to defend in the mathematical proof	Selects and explains a topic to defend in the mathematical proof; however, explanation is insufficient or inaccurate	Does not select or accurately identify a topic for mathematical proof	40
<b>Analysis</b>	Demonstrates comprehensive analysis of the topic, demonstrating the appropriateness of the topic choice	Demonstrates minimal analysis of the topic; minimally demonstrates appropriateness of topic choice	Does not demonstrate analysis of the topic or show the appropriateness of the topic	40
<b>Articulation of Response</b>	Submission has no errors related to citations, grammar, spelling, syntax, or organization	Submission has major errors related to citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas	Submission has critical errors related to citations, grammar, spelling, syntax, or organization that prevent understanding of ideas	20
<b>Total:</b>				100%