

Grading Rubric

Category	4	3	2	1
Mathematics	Demonstrates a complete understanding.	Demonstrates an adequate understanding.	Demonstrates a partial understanding.	Unsatisfactory understanding of material.
Vocabulary	Skillful use of vocabulary.	Adequate use of vocabulary.	Vague use of vocabulary.	Incorrect use of vocabulary.
Organization	Clear and logical idea progression. Easy to follow.	Adequate and logical idea progression. Generally easy to follow.	Weak idea progression and difficult to understand.	No idea progression and difficult to understand. Incomplete sentences.
Grammar	Meaning of writing is very clear with only one reading. Generally free of most errors	Meaning of writing is mostly clear with only one reading. Some errors.	Meaning of writing is interrupted with only one reading. Accumulation of errors	Meaning of writing is constantly disrupted with only one reading. Pervasive errors

Other Notes:

1. Paper must have a bibliography/citations.
2. Single spaced, 4-5 pages typed.
3. 1 inch margins.
4. Questions to ask yourself:
 - Is there a logical development of concepts?
 - Does the paper provide examples?
 - Does the paper contain all the necessary definitions?
 - Is all the information correct?
 - Are all the theorems and proofs mathematically correct?
 - Does the paper give evidence that you understand the material?
 - Is the paper organized, free of grammar and spelling errors, and have smooth transitions?

Possible topics:

1. Hilbert Spaces
2. Quantum Mechanics
3. Spectral Graph Theory
4. Google page rank algorithm
5. Numerical Linear Algebra/ Power Method Algorithm
6. Linear Differential Equations
7. Discrete Dynamical Systems
8. Least Squares Problems
9. Quadratic Forms
10. Singular Value Decomposition
11. Jordan Decomposition
12. Min-Max Theorem
13. You may also pick your own topic. Please discuss with me to see if its appropriate.