

Math 100 Exam #2 Review

The following topics will be covered on Exam #2:

- Cardinality: definition of "same cardinality" using the notion of a one-to-one correspondence.
- Cantor's diagonalization argument to show that $|\mathbb{R}| > |\mathbb{N}|$.
- Powers sets and Cantor's Power Set Theorem.
- Geometric one-to-one correspondences: stereographic projection - showing that a line segment and \mathbb{R} have the same cardinality, how squares and circles have the same cardinality, and how all line segments have the same cardinality.
- Art Gallery Theorem.
- Golden Rectangles and the Golden Ratio.
- Symmetry - the Pinwheel Pattern.
- Platonic Solids - what are they? Euler's Formula: $\#faces - \#edges + \#corners = 2$.
- Non-Euclidean geometry: the differences between Euclidean (flat) geometry, spherical geometry, and hyperbolic geometry.
- Dimension: What determines a 1 dimensional space? 2-D space? 3-D space? 4-D space?

When I grade answers to short answer or essay questions, I am looking for the quality of the answer. This includes things like

- Correctness (Is what you say correct/true? Is it answering the question asked?)

- Evidence (Do you give appropriate support for your claims?)
- Insight (Does your answer indicate that you genuinely understand the issues involved?)
- Importance (Did you focus on the most important things?)
- Brevity (Did you keep your answer free from unnecessary information?)
- Clarity (Do you express yourself clearly so that your argument is easy to understand?)