Writing Assignment 2

Task. Write a sophisticated and engaging introduction to a mathematical topic of your choice.

Old requirements. Your first and final drafts must

1. be on a topic that is *not* that of a section or a subsection of the course lecture notes, and is *not* the topic of anyone's submission for Writing Assignment 1,
2. include a bibliography using either `bibtex` or a similar bibliography management system (e.g. `biblatex`, `biber`, `natbib`),
3. use standard 10-point font and margins at most as wide as those provided by the `fullpage` package,
4. be at least four pages including the bibliography, and at least three pages not including the bibliography,
5. include at least three instances of `\ref{...}` and at least three instances of `\cite{...}`,
6. include at least two definitions and two proofs,
7. include at least three sections, including an optional introduction section.

Due dates

first draft	Thu, Apr 17
peer feedback	Tue, Apr 22
final draft	Thu, May 1

Assessment. There are fifteen total points. Thus, each point is worth 1% of your final course grade.

	criterion	*points*
first draft	submitted on time	1
peer feedback	submitted on time	1
final draft	submitted on time	1
	layout and structure	3
	quality of mathematical writing	3
	quality of scholarship	3
	ambitiousness of topic	3

Example topics. Potential topics include:

1. Construction of the *real numbers*
2. *History* of the real numbers, or of another mathematical topic or construction
3. *Arrow's impossibility theorem* in social choice theory

4. *Kleinberg's impossibility theorem* in cluster analysis
5. *Category theory* as the "mathematics of mathematics"
6. *Functional programming* and its relation to category theory
7. *Constructivism* in the philosophy of mathematics
8. *Ordinals and cardinals* and the mathematics of infinity
9. The *RSA cryptosystem* and the mathematics of cryptography
10. *Graph theory* and its applications
11. The *St. Petersburg paradox* in probability, and its variations
12. *Axiomatic set theory* and the foundations of mathematics
13. *Mathematical logic* more generally
14. *Modal logic* and its use in philosophy
15. *Turing machines* and the theory of computation
16. *Decidability* and the halting problem