

Exploring the Unseen World of Ideas
The Philosophies and History of Mathematics

Alpheus Madsen

Life, the Universe & Everything
Saturday, February 13, 2021

Mathematics and Philosophy

- What is truth?
- What does it mean to “exist”?
- Why is math so good at describing the world? Or is it?
- What is beauty? What is elegance?

Origins of Mathematics



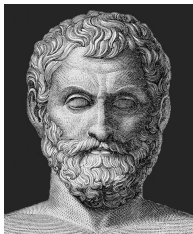
Origins of Mathematics



Origins of Mathematics

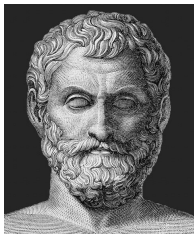


Origins of Mathematics

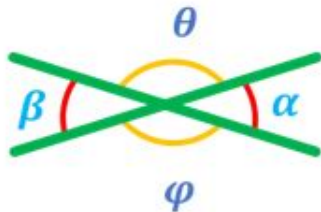


Thales of Miletus

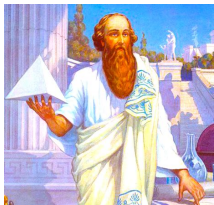
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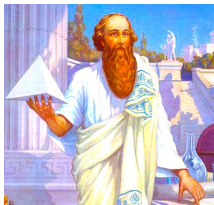


Early Philosophy of Mathematics



Pythagoras

Early Philosophy of Mathematics

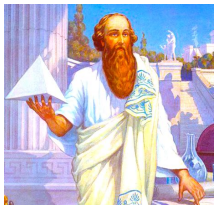


Pythagoras



Hippasus

Early Philosophy of Mathematics



Pythagoras

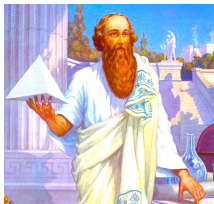


Hippasus



Euclid

Early Philosophy of Mathematics



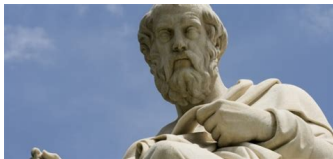
Pythagoras



Hippias

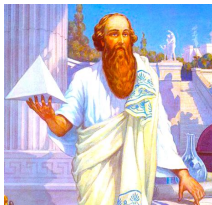


Euclid



Plato

Early Philosophy of Mathematics



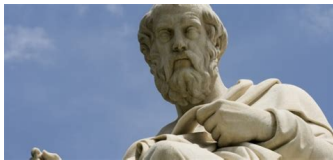
Pythagoras



Hippias



Euclid

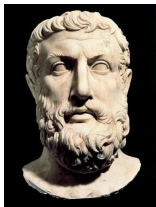


Plato



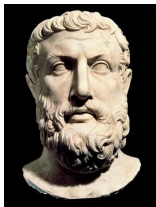
Aristotle

Paradox



Zeno of Elea

Paradox

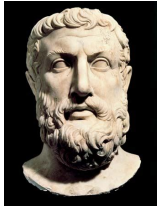


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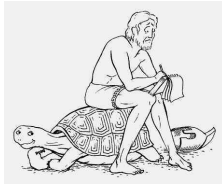


Tortoise and
Achilles

Paradox



Zeno of Elea

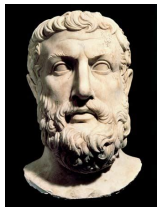


Tortoise and
Achilles



Karl Fredrich
Gauss

Paradox



Zeno of Elea



Tortoise and
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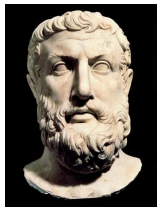


Karl Fredrich
Gauss



Lewis Carroll

Paradox



Zeno of Elea



Tortoise and
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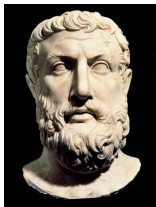


Lewis Carroll



David Hilbert

Paradox



Zeno of Elea



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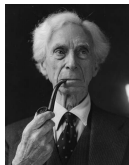
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Lewis Carroll

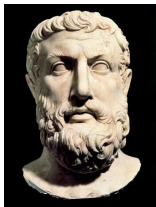


David Hilbert

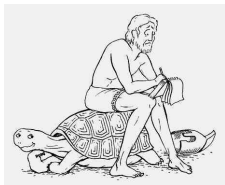


Bertrand
Russell

Paradox



Zeno of Elea



Tortoise and
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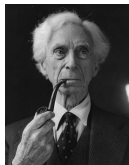
Karl Fredrich
Gauss



Lewis Carroll



David Hilbert



Bertrand
Russell



Kurt Gödel

Paradox



Stefan Banach



Alfred Tarski

Paradox



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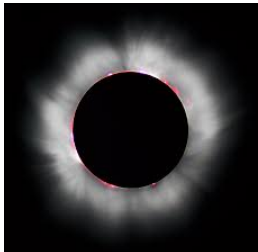
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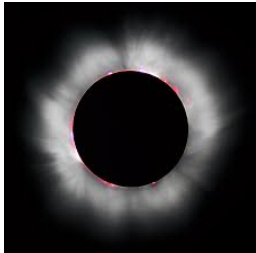
Modern Philosophies of Mathematics

- Platonists
- Nominalists
- Intuitionists and Constructionists
- Formalists and Fictionalists
- Conventionalists

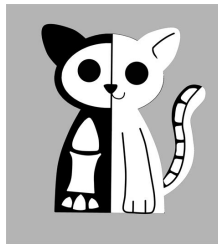
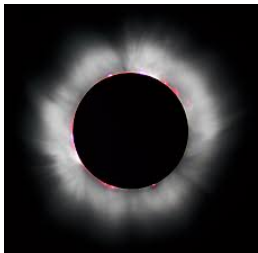
Back To Reality



Back To Reality



Back To Reality



Suggested Reading

- *Does God Play Dice?*, Ian Stewart
- *Chaos: Making a New Science*, James Gleck
- *Philosophy of Mathematics*, James Robert Brown
- *The Empreror's New Mind*, Sir Roger Penrose
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- *Here's Looking at Euclid*, Alex Bellos
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- Edward Burger (Colloquiums)
- "Do numbers EXIST?", Numberphile (video)
- "Platonism vs. Formalism", World Science Festival (video)

Any Questions?