PHI 314: Questions for Discussion

There are one or two for each lecture.
Each could be the topic of a short paper.
Adequate discussion of many would require consulting some of the recommended readings in addition to the required readings; adequate discussion of some would require bringing in material from lecture not well covered in the readings.
Many are complicated enough that they could also be the topic of a long paper.

In what sense is physical geometry empirical according to Hempel, and how if at all does it differ from other empirical sciences?

Is pure mathematics really not concerned with "truth" and "falsity"? Is the claim that "the sum of the interior angle of a triangle is 180 degrees" neither true nor false? What about "$1 + 1 = 2$"?

Why does Hahn put more weight on counterintuitive examples like space-filling curves than on the counterintuitiveness of relativitistic theories of spacetime?

What, according to Dedekind, is the relationship between the rational number 1/2 and the real number .5000?

How would Frege reply to White's claims about the locus of mathematical reality?

Why was Frege worried about Caesar, and should he have been?

What was the significance of Russell's paradox for Frege's program, and for mathematics?

What was the Russell's axiom of reducibility, and what was its role in his project?

How far do the positions of positivists such as Ayer depend on the sucess of something like Russell's logicist program?

Can Brouwer's conception of mathematics as mental mathematical construction be reconciled with its being a collaborative enterprise involving communication?

Are finitism, constructivism, and intuitionism all the same thing, or is there a difference, and if so, which is closer to orthodox mathematics?

Does the conception of mathematical objects as mental constructions inevitably lead to something like intuitionism?

Hilbert said that depriving a mathematician of the law of excluded middle was like depriving a boxer of his fists, while Kreisel claims that it is more like depriving noncommutative algebra of the law $AB = BA$; who is right?

What is the moral of Lewis Carroll's tale of the tortoise and Achilles?

What role does a project like Russell's continue to play in Hilbert's program?

Can anything of Hilbert's program survive Gödel's theorem?

Does Gödel's theorem show that the human mind has powers that cannot be duplicated by a computer, as Lucas asserts?

What is the iterative conception of set, and how does it differ from the naive conception?

Do we have something like a perception of mathematical objects?

Can there be a nonarbitrary way of settling questions that cannot be settled on the basis of the accepted axioms of set theory?

If mathematics is only a useful fiction, can physics be more than that?

Is the effectiveness of mathematics in science unreasonable?

Does anything like Benacerraf's epistemological problem arise for positive projects aiming to reconstruct mathematics along nominalist lines?

Which if either is closer to the truth, hard-headed or mystical structuralism?

Is category theory a serious rival to set theory as a foundation for mathematics?