

Exam Introduction to the Philosophy of Mathematics

December 16, 2009

15.15 – 17.15 hours

PLEASE FILL IN

AND TURN THIS SHEET
IN AS WELL

Name:

Student nr.

E-mail:

MSc Programme:

University:

YOU CAN GET THE QUESTIONS BY MAIL IF YOU WANT.

1. What does the term 'platonism' in the philosophy of mathematics refer to? (5 points)
2. What was Immanuel Kant's answer to the two central questions in the philosophy of mathematics? (10 points)
3. Brouwer realized that one cannot seriously deny the existence of actual infinity without accepting the consequences in mathematics.
Show, for example, that $(A \text{ or non-}A)$ no longer generally holds. (5 points)
4. Show that in intuitionist mathematics $(\text{non-non-}(A \text{ or non-}A))$ generally holds. (10 points)
5. What is the historical background of Hilbert's structuralism? (10 points)
6. Why is in Hilbert's structuralism the problem of consistency so important? (5 points)
7. What is Russell's paradox and how was it "solved" in the context of Hilbert's structuralism? (10 points)
8. How do Lakoff and Nuñez explain the genesis of the syllogism Barbara on the basis of cognitive psychology? (10 points)
9. What is the basic metaphor of infinity? (5 points)
10. Show by means of the example of a super-task that its application is not unproblematic. Show that this is in accordance with Lakatos' fallibilistic philosophy of mathematics. (15 points)
11. Try to explain the introduction of 4-dimensional geometry by means of a conceptual metaphor. (10 points)
12. In which way is the novel Flatland similar to Plato's allegory of the cave? (5 points)

Nota bene: The exam lasts for two hours. You have roughly 10 minutes per question.
Grade = (Total number of points)/10