

**Midterm Exam:** Friday, May 9, covering everything we've done in Chapters 6, 7, 9, 10, and 11 of Venema.

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**Reading:** Jacobs, Introductory material and Chapters 1–7 and 9–10 (just the text, not the problems).

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**Reading Report:** Due Sunday, 5/4, by midnight.

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**Written problems:** Due Wednesday, 5/7, in class. Do all of the following problems in Jacobs:

- Page 177, #12–24.
  - Page 178, #29–34.
  - Page 207, #12–14.
  - Page 209, #47–48.
  - Page 209, #49.
  - Page 246, #18–22.
  - Page 248, #1–11.
  - Page 274, #36–43.
  - Page 375, #53–54.
  - Page 404–405, #37–42.
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**Second Portfolio Assignment:** *Two copies* due Wednesday, 5/14, in class. the midterm).

Write an essay (approximately 1000–2500 words) about Jacobs's use of axioms and definitions. Try to address the following points:

- Which of Venema's axioms for Euclidean geometry did Jacobs leave out? Which ones did Jacobs include, but in less precise form?
- Are Jacobs's definitions less precise than those in Venema? Give specific examples.
- Can you determine from the text why Jacobs made the choices he did about axioms and definitions? Don't just guess – if you suggest a reason, show where your idea is supported in the text.
- Give one or two examples of theorems that are proved by both Jacobs and Venema, for which Venema uses (directly or indirectly) an axiom that Jacobs omits.
- For each theorem you cite in answer to the previous question, identify exactly the place in Venema's proof where the omitted axiom is used (either in the proof of the theorem you cited, or in the proof of a previous theorem whose result is used in the theorem you cited), and explain how Jacobs gets around the omission.
- In your own opinion, what are some logical and pedagogical arguments for and/or against Jacobs's choices regarding axioms and definitions? Support your position.

I'm looking for a well-constructed essay, not just a list of answers to the questions above. Imagine that you're going to submit your essay for publication in a journal aimed at high-school math teachers.