

# Homework 8

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MATH 261 Computational Geometry  
due 5:00pm on Tuesday, January 28

Solve the following problems from the textbook, and write your solutions clearly and neatly. Make sure to explain your reasoning and provide mathematical details that support your answers. For a few tips on writing solutions, see [this helpful guide for mathematical writing](#).

These exercises are for everyone, regardless of whether or not you are taking this course for CS elective credit.

You may write or type your solutions electronically, or write them on paper and scan/photograph them. Please use a scanning app to produce a single PDF file containing your solutions. Upload your written solutions (and your code/output if relevant) to the [Homework 8](#) assignment on Moodle.

1. Exercises 5.43
2. Exercise 6.2 — This question relies on the definition of *convexity*. You may assume that no two faces of a polyhedron are coplanar.
3. Exercise 6.11 — The great dodecahedron is shown in Figure 6.3(b).
4. Exercise 6.13
5. Exercise 6.16
6. Exercise 6.17
7. Exercise 6.18 — A *topological sphere* is any surface homeomorphic to a sphere. Roughly speaking, the surface can be deformed (without tearing or gluing) into a sphere.
8. *Reflection on mathematical elegance/beauty*: Consider one mathematical idea from the course that you have found elegant or beautiful, and explain why it is elegant or beautiful to you. Your answer should: (1) explain the idea in a way that could be understood by a classmate who has taken calculus or intro programming but has not yet taken this class and (2) address how this elegance/beauty is similar to or different from other kinds of elegance/beauty that human beings encounter. You must choose a different idea than what you used for the “creativity” question on the previous homework.