

Key to Interactive Examples for Math 20C at UCSD

The Interactive Examples listed in the last column of the chart below are web-based tutorials that can help you master concepts and techniques in the corresponding sections of your calculus text.

To access a tutorial, open my web page <http://www.math.ucsd.edu/~ashenk/> and click on the hyperlink “Interactive Examples” followed by hyperlinks for the chapter, section, and example number.

If you can work the problem, the answer is provided to check your work. Otherwise, the tutorial will lead you step by step through the thought processes required in the solution.

If you need another copy of this guide, you can download it from my home page.

Please send me any suggestions you have for improving the web site.

Al Shenk (ashenk@ucsd.edu)

Chapter 11. Parametric Equations, Polar Coordinates, Conic Sections

<i>Rogawski</i>	Topic	Interactive Examples
Section 11.1	Parametric equations	Section 13.1: 1–4
Section 11.2	Arclength and speed	Section 13.2: 8

Chapter 12. Vector Geometry

<i>Rogawski</i>	Topic	Interactive Examples
Section 12.1	Vectors in the plane	Section 12.1: 1–5, 7, 10
Section 12.2	Vectors in three dimensions	Section 12.3: 1, 2, 6 Section 12.5: 1, 2
Section 12.3	Dot product and the angle between vectors	Section 12.2: 1–5 Section 12.3: 3–5
Section 12.4	The cross product	Section 12.4: 1–8
Section 12.5	Planes in three space	Section 12.5: 3–9

Chapter 13. Calculus of Vector-Valued Functions

<i>Rogawski</i>	Topic	Interactive Examples
Section 13.1	Vector-Valued Functions	Section 13.1: 1–4
Section 13.2	Calculus of Vector-Valued Functions	Section 13.2: 1–4, 7
Section 13.3	Arc length and speed	Section 13.2: 6
Section 13.5	Motion in three space	Section 13.3: 1, 2

Chapter 14. Partial Derivatives

Rogawski	Topic	Interactive Examples
Section 14.1	Functions of two or more variables	Section 14.1: 1–5 Section 14.2: 1–3 Section 14.7: 1 Section 14.8: 1
Section 14.2	Limits and continuity in several variables	Section 14.3: 1
Section 14.3	Partial derivatives	Section 14.3: 2–5 Section 14.7: 2
Section 14.4	Differentiability, linear approximations, and tangent planes	Section 14.6: 1–3 Section 14.7: 6
Section 14.5	The gradient and directional derivatives	Section 14.5: 1–7 Section 14.7: 4–6
Section 14.6	The Chain Rule	Section 14.3: 1–6
Section 14.7	Optimization in several variables	Section 15.1: 1–6 Section 15.2: 1–3
Section 14.8	Lagrange multipliers: optimizing with a constraint	Section 15.3: 1–3

Chapter 15. Multiple Integrals

Rogawski	Topic	Interactive Examples
Section 15.1	Integration in several variables	Section 16.1: 1, 2
Section 15.2	Double integrals over more general regions	Section 16.1: 3–5 Section 16.2: 1, 2a, 3
Section 15.3	Triple integrals	Section 16.4: 1–4
Section 15.4	Integration in polar, cylindrical and spherical coordinates	Section 16.3: 1–4

Feedback from Math 20C Students, Fall Quarter, 2009.

“The step by step method of how to solve a problem was the most valuable asset of the website because it is easy to follow and it cleared up many questions I’ve had.”

“Great examples!! I learned concepts on the website that I couldn’t understand from the book.”

“I like how the Interactive Examples try to make the students solve the problems by themselves before giving the answers.”

“The web site was beneficial because it showed each step, rather than skipping steps like the book often does. It also helped me understand the material because it explained more clearly what the problem was asking for and then, rather than simply showing the operations, it also explained the reasons for performing them.”

“I found the interactive examples every useful because the problem solving process is broken into steps. I think with the steps, we understand a logical way to solve problems. They also gave me motivation to attempt to solve those problems by myself rather than just simply giving up.”

“I used the interactive examples as another source of help when I could not ask my professor or TA.”

“The interactive examples helped me a lot because I got to see every single step, and I could work on my own pace and take as long as I want with an example. Also the hints they provide before they show the numbers or the work helped me a lot because they gave me a start and I like to try problems on my own.”