

Key to Interactive Examples for Math 20B 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.

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Chapter 5. The Integral

Section 5.2	The definite integral	Section 6.2: 1–4, 6
Section 5.3	The Fundamental Theorem of Calculus, Part I	Section 6.3: 1–4 Section 6.5: 1–3 Section 6.7: 1–5
Section 5.4	The Fundamental Theorem of Calculus, Part II	Section 6.4: 1–4
Section 5.5	Net or total change as the integral	Section 6.1: 1, 2 Section 6.5: 4 Section 6.6: 1–3 Section 6.7: 8, 9
Section 5.6	Substitution method	Section 6.8: 1–5
Section 5.7	Further transcendental functions	Section 6.7: 6, 7

Chapter 6. Applications of the Integral

<i>Rogawski</i>	Topic	Interactive Examples
Section 6.1	Area between two curves	Section 7.1: 1–5
Section 6.2	Setting up Integrals: volume, density, average value	Section 7.3: 1, 2 Section 7.5: 1 Section 7.8: 1–3 Section 7.7: 1–3
Section 6.3	Volumes of revolution	Section 7.2: 1–4

Chapter 11. Polar Coordinates

Rogawski	Topic	Interactive Examples
Section 11.3	Polar Coordinates	Section 11.3: 1–5
Section 11.4	Area and arclength in polar coordinates	Section 11.3: 6, 7

Chapter 7. Techniques of Integration

Rogawski	Topic	Interactive Examples
Section 7.1	Numerical integration	Section 6.6: 4
Section 7.2	Integration by parts	Section 8.1: 1–4, 5
Section 7.3	Trigonometric integrals	Section 8.2: 1–2, 3
Section 7.4	Trigonometric substitution	Section 8.3: 1–4
Section 7.5	Integrals of hyperbolic functions	
Section 7.6	The method of partial fractions	Section 8.4: 1–4, 5
Section 7.7	Improper integrals	Section 8.6: 1–5

Chapter 10. Infinite Series

Rogawski	Topic	Interactive Examples
Section 10.1	Sequences	Section 10.1: 1–5
Section 10.2	Summing an infinite series	Section 10.2: 1–3, 5
Section 10.3	Convergence of series with positive terms	Section 10.3: 1–4 Section 10.4: 1–5
Section 10.4	Absolute and conditional convergence	Section 10.5: 2, 3
Section 10.5	The Ratio and Root Tests	Section 10.5: 1, 4, 5
Section 10.6	Power series	Section 10.7: 1–4
Section 10.7	Taylor series	Section 10.6: 1, 2 Section 10.7: 5–9

Chapter 9. Differential Equations

Rogawski	Topic	Interactive Examples
Section 9.1	Solving differential equations	Section 9.1: 1–3, 6, 8 Section 9.2: 1–3
Section 9.2	Models involving $y' = k(y - b)$	Section 9.1: 5
Section 9.3	Graphical and numerical methods	Section 9.1: 4 Section 9.4: 1

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

“I found the interactive examples very helpful because you can go at your own pace, and they tell you what you are doing step by step, so that you fully understand how you got from point a in the question to point b.”

“I enjoy the fact that you can choose to bounce back between steps because this makes not so clear parts a lot easier to understand and you can take your time.”

“I used the interactive examples when I did not understand the concepts.”

“The website was a good way for me to quickly go over everything and refresh my memory on all of the things we learned in class.”

“Without the interactive examples I wouldn’t understand as much as I do.”

“The website allowed me to learn on my own without having to worry when I got lost in a problem.”

“The Interactive Examples are extremely well organized and easily accessible. Even for more complicated examples, the step-by-step approach makes calculus easier to comprehend.”