

Key to Interactive Examples for Math 20A 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 access it on my home page.

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

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Chapter 1. Precalculus Review

<i>Rogawski</i>	Topic	Interactive Examples
Section 1.1	(Review) Real numbers, functions and graphs	Section 0.1: 1–3 Section 0.2: 1–5 Section 0.3: 7–8
Section 1.2	(Review) Linear and quadratic functions	Section 2.1: 3, 4
Section 1.3	(Review) The basic classes of functions	Section 0.3: 1, 2, 5, 6 Section 0.6: 1, 2, 4
Section 1.4	Trigonometric functions	Section 0.5: 1–4, 7
Section 1.5	Inverse functions	Section 0.4: 1, 7 Section 0.5: 5, 6
Section 1.6	Exponential and logarithmic functions	Section 0.3: 3, 4 Section 0.4: 2–6 Section 0.6: 3 Section 3.7: 1–3

Chapter 2. Limits

<i>Rogawski</i>	Topic	Interactive Examples
Section 2.1	Limits, rates of change, and tangent lines	Section 2.2: 1–4
Section 2.2	Limits: A numerical and graphical approach	Section 1.1: 1–3 Section 1.4: 1–5
Section 2.3	Basic limit laws	Section 1.1: 4
Section 2.4	Limits and continuity	Section 1.3: 1–4

Rogawski	Topic	Interactive Examples
Section 2.5	Evaluating limits algebraically	Section 1.2: 1–6
Section 2.6	Trigonometric limits	
Section 2.7	The Intermediate Value Theorem	Section 1.3: 6

Chapter 3. Differentiation

Rogawski	Topic	Interactive Examples
Section 3.1	Definition of the derivative	Section 2.1: 1, 2, 5, 6 Section 2.3: 1–5 ($h = \Delta x$ in # 5's solution)
Section 3.2	The derivative as a function	Section 2.4: 1–4
Section 3.3	Product and Quotient Rules	Section 2.6: 1–4
Section 3.4	Rates of change	Section 2.5: 1–5 Section 2.6: 5
Section 3.5	Higher derivatives	Section 2.5: 6
Section 3.6	Trigonometric functions	Section 3.5: 1 Section 3.6: 1, 5
Section 3.7	The Chain Rule	Section 2.7: 1–4 Section 3.1: 1, 2a, 3 Section 3.5: 2 Section 3.6: 2, 3
Section 3.8	Implicit differentiation	Section 5.3: 1–5
Section 3.9	Derivatives of inverse functions	Section 3.6: 4 Section 5.3: 6, 7
Section 3.10	Derivatives of exponential functions and logarithms	Section 3.2: 1–4 Section 3.3: 3–6, 8 Section 3.5: 3, 4 Section 3.7: 4, 5
Section 3.11	Related rates	Section 3.5: 5 Section 3.6: 6 Section 5.2: 1–3

Chapter 4. Applications of the Derivative

Section 4.1	Linear approximations and applications	Section 2.8: 1, 3
Section 4.2	Extreme values	Section 4.1: 1, 2 Section 4.4: 1
Section 4.3	The Mean Value Theorem and monotonicity	Section 4.1: 3
Section 4.4	The shape of a graph	Section 4.2: 1, 2 Section 4.3: 1–4
Section 4.5	Graph sketching and optimization	Section 4.5: 1, 2
Section 4.6	Applied optimization	Section 4.6: 1–5
Section 4.7	L'Hopital's Rule	Section 5.1: 1, 2, 4–9
Section 4.9	Antiderivatives	

Chapter 5. The Integral

Section 5.1	Approximating and computing area	
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: 1–3 Section 6.3: 6 Section 6.5: 4 Section 6.6: 1–4

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

"I find the Interactive Examples quite helpful. The step by step process makes the problems easier to understand."

"The interactive examples were really helpful in further explaining the material learned in class and gave me more examples with great explanations about how to complete the problems."

"I used the interactive examples for concepts I had trouble with."

"It gave me a sense of security to view the on line examples and then go to my homework and see the same types of problem."

"The online examples proved to be a valuable resource for me this quarter. I can honestly say that without them I would not have passed the course."

"I think working with the interactive examples is better than reading the book, since it saves time and keeps me awake."

"If I didn't completely understand something during lecture I would go on the web site to get a better understanding. I found that going over problems step-by-step really helped me understand the material thoroughly."

"I used the Interactive Examples frequently before midterm exams and I plan to use them as a study tool for the upcoming final exam as well! I find them very useful for clearing up the mistakes I make while solving problems. They make it so easy."