

Key to Interactive Examples[†] for Math 20E 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 course textbook.

To access a tutorial, open the web page <http://www.math.ucsd.edu/~ashenk/> and select “Interactive Examples” followed by the chapter, section, and example numbers.

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 the web page.)

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Chapter 1. The Geometry of Euclidean Space

<i>Marsden/Tromba</i>	Topic	Interactive Examples
Section 1.1	Vectors in Two- and Three-Dimensional Space	Section 12.5: 2
Section 1.2	The Inner Product, Length, and Distance	Section 12.2: 1, 2 Section 12.3: 3
Section 1.3	Matrices, Determinants, and the Cross Product	Section 12.4: 1, 3, 5 Section 12.5: 3

Chapter 2. Differentiation

<i>Marsden/Tromba</i>	Topic	Interactive Examples
Section 2.1	The Geometry of Real-Valued Functions	Section 14.1: 1, 2 Section 14.2: 1, 2 Section 14.7: 1
Section 2.2	Limits and Continuity	Section 14.3: 1
Section 2.3	Differentiation	Section 14.3: 2, 3 Section 14.7: 4a, 6
Section 2.4	Introduction to Paths and Curves	Section 13.1: 2 Section 13.2: 2–4
Section 2.6	Gradients and Directional Derivatives	Section 14.5: 3 Section 14.6: 6 Section 14.7: 4

[†]See the web site <http://www.math.ucsd.edu/~ashenk/>.

Chapter 3. Higher Order Derivatives; Maxima and Minima

Marsden/Tromba	Topic	Interactive Examples
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Section 3.2	Taylor's Theorem	Section 15.2: 1
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Chapter 4. Vector-Valued Functions

Section 4.1	Acceleration and Newton's Second Law	Section 13.2: 6, 7
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Section 4.2	Arc Length	Section 13.2: 8a
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Section 4.3	Vector fields	Section 17.1: 1–3
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Section 4.4	Divergence and Curl	Section 17.5: 4, 5 Section 17.7: 1a, 1b
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Chapter 5. Double and Triple Integrals

Section 5.3	The Double Integral over General Regions	Section 16.1: 3, 4
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Section 5.4	Changing the Order of Integration	Section 16.1: 5
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Section 5.5	The Triple Integral	Section 16.4: 1–4
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Chapter 6. The Change of Variables Formula

Section 6.2	The Change of Variables Theorem	Section 16.3: 1–4
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Chapter 7. Integrals over Paths and Surfaces

Section 7.1	The Path Integral	Section 17.2: 2, 3a, 4
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Section 7.2	Line Integrals	Section 17.2: 1
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Section 7.5	Integrals of Scalar Functions over Surfaces	Section 17.6: 1b, 1c, 2
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Chapter 8. The Integral Theorems of Vector Analysis

Section 8.1	Green's Theorem	Section 17.5: 2–5
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Section 8.2	Stokes' Theorem	Section 17.7: 2–4
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