

**Key to Interactive Examples<sup>†</sup>**  
**by Al Shenk**  
**for Math 151 at USD**

Look for examples that are similar to your homework and exam problems.

***Chapter 6. Constructing Antiderivatives***

<b><i>Hughes-Hallett</i></b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 6.1	Antiderivatives graphically and numerically	
Section 6.2	Constructing antiderivatives analytically	Section 6.3: 3–6 Section 6.6: 1–3 Section 7.1: 1–5
Section 6.3	Differential equations	
Section 6.4	Second Fundamental Theorem of Calculus	Section 6.4: 1–4
Section 6.5	The equations of motion	

***Chapter 7. Integration***

<b><i>Hughes-Hallett</i></b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 7.1	Integration by substitution	Section 6.7: 1–4
Section 7.2	Integration by parts	Section 8.1: 1–5
Section 7.3	Tables of integrals	Section 8.5: 1–3
Section 7.4	Algebraic identities and trigonometric substitutions	Section 8.4: 1–4
Section 7.5	Approximating definite integrals	Section 6.5: 1, 2
Section 7.6	Approximation errors and Simpson’s Rule	Section 6.5: 3
Section 7.7	Improper integrals	Section 8.6: 1–5
Section 7.8	Comparison of improper integrals	

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

**Chapter 8. Using the definite integral**

<b>Hughes-Hallett</b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 8.1	Areas and volumes	Section 7.3: 1, 2
Section 8.2	Applications to geometry	Section 7.2: 1–4 Section 7.5: 1
Section 8.3	Area and arc length in polar coordinates	Section 11.3: 1–5
Section 8.4	Density and center of mass	Section 7.8: 1–3
Section 8.5	Applications to physics	Section 7.9: 1–4
Section 8.6	Applications to economics	
Section 8.7	Distribution functions	
Section 8.8	Probability, mean, and median	

**Chapter 9. Sequences and Series**

<b>Hughes-Hallett</b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 9.1	Sequences	Section 10.1: 1–5
Section 9.2	Geometric series	Section 10.2: 1–3
Section 9.3	Convergence of series	Section 10.3: 1–4
Section 9.4	Tests for convergence	Section 10.4: 1–5 Section 10.5: 1–5
Section 9.5	Power series and interval of convergence	Section 10.7: 1–4

**Chapter 10. Approximating Functions Using Series**

<b>Hughes-Hallett</b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 10.1	Taylor polynomials	Section 10.6: 1–3, 4a
Section 10.2	Taylor series	
Section 10.3	Finding and using Taylor series	Section 10.7: 5–9
Section 10.4	The error in Taylor polynomial approximations	Section 10.6: 4b
Section 10.5	Fourier series	

**Chapter 11. Differential Equations**

<b><i>Hughes-Hallett</i></b>	<b>Topic</b>	<b>Interactive Examples</b>
Section 11.1	What is a differential equation?	
Section 11.2	Slope fields	Section 9.1: 4
Section 11.3	Euler's Method	Section 9.4: 1
Section 11.4	Separation of variables	Section 9.1: 1–3, 5, 6, 8
Section 11.5	Growth and decay	Section 3.4: 1–4
Section 11.6	Applications and modeling	
Section 11.7	Models of population growth	
Section 11.8	Systems of differential equations	
Section 11.9	Analyzing the phase plane	
Section 11.10	Second-order differential equations: oscillations	
Section 11.11	Linear second-order differential equations	Section 9.5: 1–4