Chapter 7 Learning Objectives

Tests are written to evaluate student *comprehension*, *acquisition*, and *synthesis* of these skills. The problems listed in the WA column are the textbook exercises that appear in WebAssign. The problems appearing in the Add’l (Additional) column are good practice problems which are located in the text. The answers to odd-numbered problems are given in the back of the text. The detailed solutions to the odd-numbered problems are also available in the Student Solutions Manual which is available for purchase at the bookstore. Best practices for students preparing for tests include insuring mastery and conceptual understanding of each skill listed below.

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<tr>
<th>Sec</th>
<th>Learning Objective</th>
<th>WA</th>
<th>Add’l</th>
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| 7.1 | • Drawn an input/output diagram of a multivariable function;  
• Interpret various representations of multivariable functions, including equations, tables, and contour curves;  
• Evaluate a multivariable function at a point;  
• Solve a multivariable function for a specific input variable;  
• Compute the change and percent change;  
• Draw a contour curve on a data table; and  
• Draw a contour curve given the equation of a multivariable function. | 16, 18, 20 | 13, 25, |
| 7.2 | • Write a cross-sectional equation given a multivariable function or a multivariable data table;  
• Write a completely defined cross-sectional model (1 equation  2 output units and description  3 input units and description  4 input interval);  
• Recognize and be able to use the notation for the derivative of cross-sectional function, i.e., $\frac{dy(17,t)}{dt}\bigg|_{t=43}$ or $\frac{dy(17,t)}{dt}\bigg|_{t=43}$; and  
• Find and interpret the derivative of a cross-sectional model at a point. | 2, 4, 5, 8, 9, 14 | 1, 3, 7, 11, 13, |
| 7.3 | • Find the first and second partial derivatives of a multivariable function;  
• Recognize and use the different notations for the first and second partial derivatives of a multivariable function;  
• Determine the units on the first partial derivative of a multivariable function; and  
• Find (algebraically and using nDeriv on the calculator) and interpret the first partial derivative of a multivariable function at a point. | 4, 6, 8, 10, 12, 14, 18 | 3, 5, 9, 11, 13, 17, 25 |
| 7.4 | • Find the slope of the line tangent to a contour curve at a point given the equation of the multivariable function;  
• Compensate for change given the multivariable function $f(x, y)$ (i.e. approximate the change in $x$ required to compensate for a small change in $y$ if $f(x, y)$ is to remain constant); and  
• Compensate for change given the contour graph of the multivariable function $f(x, y)$ (i.e. approximate the change in $x$ required to compensate for a small change in $y$ if $f(x, y)$ is to remain constant). | 2, 6, 10, 12, 18 | 1, 3, 5, 7, 9 |