Calculus II Guide

This guide is intended for instructors

Based on the 2012 assessment, some students may need additional work on the following topics:

I. Integration By Parts
Students were successful in identifying u but did not identify dv in differential form correctly. Students did not successfully evaluate a definite integral using integration by parts.
Instructors should place greater emphasis on the following:
• Choosing u and dv and writing them out correctly
• Evaluating both definite and indefinite integrals applied to integrals with products of two functions, single functions, and odd powers of secant and cosecant.

II. Integration of Powers of Trig Functions
Students did not correctly integrate a single trig function raised to an odd power.
Instructors should place greater emphasis on the following:
• Memorizing and apply the rules for integrating odd and even powers of trig functions.
• Using the Pythagorean trig identities to convert the integrands
• Integrating by hand
• Providing additional problems to supplement the text

III. Volume of Solids of Revolution
 Students chose the correct variable of integration for the shell method. However, many students did not set up the integral correctly in order to compute the volume of the solid.
Instructors should place greater emphasis on the following:
• Memorizing the formulas for the shell and disk methods
• Integrating by hand and by using technology
• Finding the limits of integration
• Sketching graphs of the rotated regions along with a representative disk, washer, or shell.
• Comparing and contrasting the two methods when presented in class.

IV. Power Series
A little over half of the students were able to determine the radius of convergence for the power series after applying the Ratio Test.
Instructors may need to:
• Spend a little more time on this topic
• Make sure students can determine the radius of convergence from the inequality resulting from the Ratio Test and from the interval of convergence.

V. Polar Areas
Students had difficulty determining the limits of integration and computing the area of the polar region.
Instructors should place more emphasis on:
• Finding areas enclosed by one polar curve or part of one polar curve
• Finding areas enclosed by two polar curves
• Memorizing the formulas for finding polar areas
• Determining the limits of integration
• Integrating by hand with even powers of the sine and cosine functions

VI. Trapezoidal Rule
Students did not successfully compute a definite integral by the Trapezoidal Rule using a function represented in table form.
Instructors may need to be sure to:
• Apply the rule to functions in formula form
• Apply the rule to functions in table form
• Use the Trapezoidal and Simpson’s Rules in applications