



## FRANKLIN UNIVERSITY PROFICIENCY EXAM (FUPE) STUDY GUIDE

<b>Course Title:</b>	<i>Applied Calculus (MATH 180)</i>
<b>Recommended Textbook(s):</b>	<i>Calculus: An Applied Approach</i> , 8 <sup>th</sup> edition, Larson and Edwards, Houghton Mifflin, 2009
<b>Number &amp; Type of Questions:</b>	20 Problems with complete solutions
<b>Permitted Materials:</b>	<b>Pencil &amp; Formula Sheet (no examples) – submitted with test. Scientific or graphics calculator [NOT one with a built-in algebra system (e.g., TI-89 or TI-92)]</b>
<b>Time Limit:</b>	3 Hours
<b>Minimum Passing Score:</b>	70%

### Knowledge and Skills Required:

This test measures knowledge, skills, and competence of the topics addressed in Chapters 1 through 5, Section 6.1, and Chapter 9.

A formula reference sheet (no examples) may be prepared and used for the test. This sheet must be submitted with the test. A scientific or graphics calculator may be used, but a calculator with a built-in algebra system (e.g., TI-89 or TI-92) may NOT be used.

To pass this test, a student should be able to:

- Interpret various forms of notation indicating the derivative of a function.
- For a given function, find the difference quotient for a given value.
- Find derivatives of the types of functions addressed in the chapters noted above.
- Apply the concept of rate of change to application problems involving marginal cost, marginal revenue, and marginal profit.
- Find the critical numbers of a function.
- Find the equation of a tangent line at a given point.
- Determine the intervals in which a given function is increasing and decreasing.
- Find the absolute minimum and absolute maximum of a function in a given interval.
- Use the techniques of calculus to sketch a function, marking any asymptotes and intercepts.
- Find the differentials,  $dy$  and  $dx$ , of a function.
- Use differentials to approximate the change in cost, revenue, or profit in an application situation.
- Use the techniques of calculus to solve application problems involving continuously compounded interest.
- Find the indefinite integrals of the types of functions addressed in the chapters noted above.
- Find the particular antiderivative that satisfies given conditions.
- Find the area of a region bounded by two curves.