Math 132/141 Final Exam Information (Spring 2022)

The date and time of the final exam is Monday, May 16 at 8am to 10:15am. You are allowed 2 hours to take it. No outside resources, including the internet or a calculator, are allowed. **You will need to know your student ID and have some photo ID.** This link is [the bubble sheet](https://drive.google.com/file/d/1pqZ3LPCmwI0bJuBrPrhFh-iI__nP-Tcw/view?usp=sharinguid=113406255283924266334&rtpof=true&sd=true) used on the final exam (it’s page 1, you don’t need to print it beforehand).

**Location of the final:**

Math 132:

Dr. Gelantalis’ sections go to Buehler 415

Dr. Ho’s, Mrs. Smith’s and Mr. Sukanek’s sections go to Buehler 555

Math 141:

Mr. Sukanek’s section goes to Buehler 555

Dr. Nguyen’s, Dr. Swenson’s, and Mr. Wright’s sections go to Buehler 300

[Math 132 and 141 exams written this semester by the person writing the final](https://docs.google.com/document/d/13VX9ThEnojSUW_mXlSKmE2iTjUUqoO_VxmjfRT0qqDc/edit?usp=sharing)

Every problem on the exam falls into one of the following categories. On the final exam, you should be able to do the following (sections covered in brackets):

* Compute limits and determine asymptotes, utilizing L'Hôpital's rule when appropriate {2.2, 2.3, 2.6, 4.4}
* Compute a derivative using the definition {2.7, 2.8}
* Interpret a derivative as a rate of change {2.7 through 3.7}
* Compute derivatives and antiderivatives {3.1 through 3.6, 4.9}
* Use implicit differentiation and logarithmic differentiation {3.5, 3.6}
* Solve a related rates problem {3.9}
* Find extrema, intervals of increase/decrease, intervals of concavity, inflection points, and asymptotes {4.1, 4.3, 4.5}
* Sketch the graph of a function given certain characteristics of f(x) {almost all}
* Solve an optimization problem {4.7}
* Use linear approximation and Taylor polynomial approximation {3.10, Taylor Polynomials}
* Determine information about a function from its graph (such as limits {2.2, 2.6}, continuity {2.5}, differentiability{2.7, 2.8}, average rate of change {2.1}, first or second derivatives {2.8, 4.5}, etc.)
* Find the tangent line to a curve in some setting (function {2.7 through 3.6}, implicit curve {3.5}, or parametric curve {10.2})
* Answer questions about parametric equations {10.1, 10.2}
* Answer non-computational questions about Newton’s method {4.8}
* Do problems similar to the homework exercises or worksheet problems
* Answer conceptual questions about the material

An idea for studying: First, ensure you know what all the bullets above mean. The best way to study is to practice working problems. Redo all your tests. The first time probably won’t go well, but get a sense of what you really don’t remember (it’s fine if it’s a lot!). Find the section that concept is from and look over/redo problems from the notes and worksheets, then redo the homework from that section. Retake the tests (especially the ones you couldn’t do before). Redo all the hmk sets listed above by topic. Give all of your notes and worksheets a good look over, redoing problems. Take advantage of the [Math Place](https://www.math.utk.edu/info/the-math-place/) and your teacher’s office hour!

Types of limits covered:

* where f(x) is continuous
* as x tends to infinity or negative infinity (affiliated with horizontal asymptotes)
* piecewise functions
* Squeeze Thm
* non-zero over zero (affiliated with vertical asymptotes)
* Graphically
* L’Hopital’s Rule
  + 0/0
  + infinity over infinity
* Other indeterminate forms you can algebraically convert into L’Hopital’s Rule
  + Infinity minus infinity
  + Zero times infinity
  + 0 raised to the 0
  + infinity raised to the 0
  + 1 raised to the infinity

Derivative rules covered:

* Power and other beginning rules
* Exponential base e
* Product and Quotient rule
* All Trig functions
* Inverse sine, tangent, and secant
* Natural Log
* Chain
* Implicit and logarithmic differentiation
* Treating variables as constant

WARNING: On the exam you will need to show all your work. Answers without sufficient supporting work will not receive credit. You must show your reasoning and/or the necessary algebra and calculus steps to support your answers. Numerical answers can be written in exact form (i.e., you don’t have to worry about computing the decimal expansion of your answers). If you have any questions about the amount of work we expect to see on the test, please discuss this with your instructor prior to the test.