MTH 131-001 Final Exam Information

Our final exam is scheduled for our last class period on Wednesday, December 15. The final exam will consist of twenty 5-point problems---one problem from each of the section objectives listed below. Each answer will have the form of a single number, $\pm\infty$, DNE, a single word, or a short phrase. The answer itself will be worth **up to** 2 points. The supporting work or explanation will be worth **up to** 3 points. The supporting work will be scored as follows:

- 0 points - No work or no correct work/explanation
- 1 point - Some correct ideas and work/explanation
- 2 points - The ideas and work/explanation are mostly correct
- 3 points - The ideas, notation, and work/explanation are correct

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Final exam skill list

1. State and explain, with examples, the ways limits may fail to exist. (Section 2.2)
2. Determine one-sided and two-sided infinite limits. (Section 2.2)
3. Use algebraic techniques to resolve 0/0 indeterminate forms. (Section 2.3)
4. Use the definition of continuity to determine if a function is continuous at a point. (Section 2.4)
5. Use the limit definition of derivative to evaluate a derivative. (Sections 3.1 & 3.2)
6. Evaluate derivatives (and higher-order derivatives) using basic differentiation rules. (Section 3.3)
7. Use the chain rule to differentiate compositions of functions. (section 3.6)
8. Find equations of the lines tangent and normal to the graph of an implicitly-defined function. (Section 3.8)
9. Evaluate derivatives involving the inverse trigonometric functions. (Section 3.7)
10. Compute the derivative of a logarithmic function of any base. (Section 3.9)
11. Determine the linearization of a function at a point, and use it to approximate function values near the point. (Section 4.2)
12. Find the critical numbers of a function. (Section 4.3)
13. Find the absolute extreme values of a continuous function on a closed, bounded interval. (Section 4.3)
14. Use the second derivative to find intervals on which the graph of a function is concave up/down. (Section 4.5)
15. Use algebraic techniques to rewrite limits so that L'Hopital's rule applies. (Section 4.8)
16. Solve initial value problems. (Section 4.10)
17. Compute a Riemann sum for a function on an interval. (Section 5.1)
18. Use the Fundamental Theorem of Calculus to evaluate definite integrals. (Section 5.3)
19. Use and evaluate definite integrals in applications involving area and average value. (Section 5.3)
20. Use substitution to evaluate definite integrals. (Section 5.5)