# NOTES FOR MTH 132 INSTRUCTORS

1. In Section 2.2 use the Sandwich Theorem to show that $\lim_{x\to 0} x \sin \dfrac{1}{x} = 0$.
2. From Section 2.3 cover only the formal definition of limit. In class do even problems from the supplemental exercises.
3. There is a shortage of exercises at the end of Section 2.4 concerning the formula $\lim_{x\to 0} \dfrac{\sin x}{x} = 1$. Additional problems are in the Supplemental Exercises for Section 2.4.
4. In Section 2.4 mention that the Sandwich Theorem holds for limits at $\pm\infty$.
5. When covering Section 2.6 do problems 3 and 6 from the Supplemental Exercises for Section 2.6.
6. Omit Section 2.7. It is superseded by Section 3.1.
7. In Section 2.2 state the formula for computing the product of three and more factors. Examples can be given after Section 3.4.
8. Demonstrate the formula for the derivative of the product of three factors using the trig functions introduced in Section 3.4. Repeat in the next section.
9. Replace the proof of the Power Rule for Rational Exponents in Section 3.6 with the one presented in the Supplemental Material for Section 3.6.
10. The textbook is short on exercises to find the line tangent to the graph of an equation at a point on the graph. In the Supplemental Exercises for Section 3.6 you will find some additional problems.
11. The definition of local extreme values in the textbook is not clear. State the definition so that it is clear that a local extreme value can't occur at an endpoint.
12. The textbook seems to miss the point of linear approximation (Section 3.8). Point out that it is just the first step. In second semester calculus approximation by higher degree polynomials is presented. When covering Section 3.7 do problems such as, "Approximate $\sqrt{8.5}$, $\sqrt{17}$, $\sqrt[3]{26}$ etc".

13. The text neglects to mention that l'Hôpital's rule holds when $x \to \pm\infty$. The first 8 problems and many others on page 298 can be done more efficiently by methods other than l'Hôpitals Rule. So select problems to do in class with care.

14. In Section 4.8, page 308 amend the formula 4. - 7. as follows.

| Function | General antiderivative |
|---|---|
| $\sec^2(kx)$ | $\dfrac{\tan(kx)}{k} + C$ |
| $\csc^2(kx)$ | $-\dfrac{\cot(kx)}{k} + C$ |
| $\sec(kx)\tan(kx)$ | $\dfrac{\sec(kx)}{k} + C$ |
| $\csc(kx)\cot(kx)$ | $-\dfrac{\csc(kx)}{k} + C$ |

15. For Section 5.3 use the Supplemental Material for Section 5.3 to present the definite (Riemann) Integral. For average value, see the textbook, but the assumption of continuity isn't necessary. Change it to integrable.