

Test #2 will be given on Friday, March 12. It will include material from Sections 2.6 – 2.8 and 3.1 – 3.3.

Be sure to bring your calculator to the test. If you forget your calculator or if your calculator is not working, go to the Math/Science Center in Room 02 Macklin Tower to get a short-term calculator loan.

IMPORTANT REMINDERS

MAKEUP POLICY: If you know in advance that you have to miss a quiz or test, you can make arrangements with me to take the quiz or test **before** it is given in class. Otherwise, no makeup quizzes will be given. If you miss a test, it may be made up only if you

- Do not have more than one unexcused absence during the time period covered on the test.
- Contact me on or before the scheduled test date.
- Can prove that you have a legitimate excuse.
- Either have completed the EWA homework on the relevant material or show me all homework on the relevant material.

If you do not meet these conditions, you will not be permitted to take a makeup test and the percentage equivalent of your final exam grade will be substituted for the grade of the missed test. No student will be permitted to take more than one makeup test.

ACADEMIC HONESTY: All students are expected to do their own work on quizzes and tests. Students are expected to observe the following rules during any test or quiz.

- Students may not use or even hold a cell phone, ipod, or any other electronic device (other than a calculator). **Any student who is found to have such a device turned on during a test or quiz will receive a grade of zero on that test or quiz.**
 - Students may not speak to or share materials with other students.
 - Students should have all materials ready at the beginning of the quiz or test.
 - Students should remain in the room during the entire test or quiz.
- Appropriate penalties will be imposed for breaches of academic honesty.

To be prepared for this test, you should be able to

- **Use the definition of the derivative** at a point to find $f'(x)$ for a function. This involves knowing the definition *exactly*.
- Estimate the value of the derivative numerically and graphically.
- Interpret the derivative verbally.
- Understand the relationship between the behavior of a function and the behavior of its derivative; be able to sketch the graph of the derivative from the graph of the function.
- Understand the concept of a differentiable function and how a function can fail to be differentiable.
- Interpret the second derivative.
- Use the first and second derivatives to obtain information about the behavior of a function; sketch the graph of a function f from the graph of f' or from information about f , f' and f'' .
- Differentiate algebraic and exponential functions using differentiation rules from Section 3.1.
- Use the product and quotient rules for finding derivatives.
- Find derivatives of trigonometric functions.
- Use derivatives to solve problems involving tangent lines, velocity, and acceleration.

OVER →

Suggested Review Exercises from your textbook:

<p>Chapter 2 Review (p. 164) Concept Check: 12 – 16 True-False: 15, 16 Exercises: 29, 30, 33, 35, 37, 39, 41, 43, 45</p>	<p>Chapter 3 Review (p. 248) Concept Check: 1 True-False: 1, 2 Exercises: 3, 9, 38, 42, 48 (f' only), 51 (a), 52 (a) (b), 64, 67</p>
--	--

Additional Review Exercises

- Let $h(t)$ be a person's height (in inches) as a function of his or her age (in years).
 - What are the units of $h'(t)$?
 - Write a sentence explaining the meaning of the statement $h'(13) = 2$.
 - Write a sentence explaining the meaning of the statement $h'(30) = 0$.
- Find the derivative of each function.

(a) $f(x) = 5x^3 - 3x^2 + 7x - 12$	(b) $y = e^x + x^e + e^e$	(c) $g(x) = \frac{x^4}{4} - \frac{2x^3}{3} + \frac{x^2}{2} + \frac{x}{5}$
(d) $f(x) = \frac{4}{x^4} - \frac{3}{2x^3} + \frac{2}{x^2} + \frac{5}{x}$	(e) $y = x\sqrt{x} - 3\sqrt{x} + \sqrt[3]{x^2}$	(f) $f(x) = \frac{x^4 - 5x^2 - 3}{x^2}$
(g) $g(x) = \frac{x^2}{x^4 - 5x^2 - 3}$	(h) $f(x) = 3\sin x \cos x$	(i) $y = \frac{x^2}{2 + \tan x}$

- Write the equation of the tangent line to $y = 3e^x + 2x - 7$ when $x = 0$ on the curve.
- For what value or values of x does the function $y = \frac{1}{3}x^3 + 2x^2 - 12x + 7$ have a horizontal tangent line?
- Let $f(x) = \frac{1}{x}$
 - Write the equation of the tangent line to $f(x)$ when $x = 1/3$ on the curve. Check your results graphically by graphing the function and the tangent line.
 - For what value or values of x does the function $f(x) = \frac{1}{x}$ have a tangent line with slope $m = -4$?