

EXAM 1 IS THUR IN QUIZ SECTION

Allowed:

1. A **Ti-30x IIS Calculator**
2. An 8.5 by 11 inch sheet of handwritten notes (front/back)
3. Pencil or black/blue pen (a ruler)

Details and rules:

1. 4 pages of questions, 50 minutes.
2. **Show your work using methods from class.** The correct answer with no supporting work is worth zero points.
3. Clearly indicate work you want graded. Box your final answers.

4. No make-up exams; if you are physically unable to be at the test, go to doctor and get documentation (and your grade will be prorated)
5. There are multiple versions of the test!!!! They will look similar. If you copy off a classmate we will know and will report it to misconduct board (and you'll get a zero on the entire test). So don't sit next to your study partners and be tempted to cheat. And show your work!

Quick Review (Checklist)

1. Be able to find, compute and interpret these:

$$f(x), \quad \frac{f(b)-f(a)}{b-a},$$

$$\frac{f(x+h)-f(x)}{h}, \quad f'(x)$$

2. Find and interpret “secant slopes” (average rates), and

“tangent slopes” (instantaneous rates).

3. Be able to find *the equation for a line*, and, specifically, *the equation for a tangent line*.

4. Know your derivative rules very well (you will use ALL of product, quotient, chain and power rules).

5. Be able to find the second derivative.

6. Be able to solve linear equations, and quadratic equations and be comfortable with basic algebraic manipulations (add/subtract, mult/divide, powers/roots, fractions).

7. Know the connections between the graph of $f(x)$ and the graph of $f'(x)$. Namely:

$f(x)$	$f'(x)$
Horiz. Tangent <i>(peak, valley, or "chair")</i>	Zero <i>(crosses x-axis)</i>
Increasing <i>(uphill)</i>	Positive <i>(above x-axis)</i>
Decreasing <i>(downhill)</i>	Negative <i>(below x-axis)</i>

8. Know the applications

- TR/TC, MR/MC, and profit.
- Height of a balloon and rate of ascent.
- Distance and speed.

9. Know how to compare two derivatives graphs. What does it mean when MR and MC cross? What about when rate of ascent graphs cross? What if $g'(x)$ and $h'(x)$ cross? Etc...

Reminder:

If $g'(x) > h'(x)$,
then $g(x)$ is “faster” than $h(x)$.

So if $g(x)$ is above $h(x)$ at that moment, then the gap is growing)

For example:

MR > MC means Profit growing
Rate of A > Rate of B means vertical distance between is growing

And the moment you switch from MR > MC to MR = MC (or the derivatives are the same) then profit is maximum (largest vertical gap).