

Math 1100 Chapter 1 Test Review

About the test: No notes. Calculators are allowed, but storing notes, etc. on them is cheating. You may not use a cell phone. You must show your work to get credit, so be careful of having your calculator do something you should be doing yourself. Simplify your answers as far as possible. Points are taken off for rounding and labeling errors. Seating during the test is every other seat.

Be able to

- draw secant and tangent lines
- determine whether slope is positive, negative, 0, etc.
- find the slope of a tangent line by taking the derivative
- find the equation of a tangent line given the slope and a point
- things that the derivative represents, such as the slope of a tangent line, rate of change, velocity, marginal cost, marginal profit, etc.
- find derivatives of constant functions, lines, polynomials, powers, etc.
- evaluate a function and its derivative at a particular point
- give the official definition of the derivative
- finding limits given a graph or a formula
- finding limits at infinity
- determine whether a function is continuous and/or differentiable given a graph or a formula
- work with piecewise functions
- find second derivatives
- interpret various notations involving derivatives
- find the average rate of change and (instantaneous) rate of change
- find velocity and acceleration given position as a function of t (careful with units)
- interpret a graph of position vs time

Memorize

- $y - y_1 = m(x - x_1)$
- power rule and generalized power rule
- definition of the derivative (pg 94) except replace a with x if I ask for $f'(x)$
- average rate of change $\frac{f(b) - f(a)}{b - a}$
- $v(t) = s'(t)$, $a(t) = v'(t) = s''(t)$

Extra Credit Review Problems (15 points)

- 1.2 pg 82-84: 2,13-18,22
- 1.3 pg 91-93: 1,4,6,7,13,19,22,27,32
- 1.4 pg 102-103: 3,5,6,10,11,22,23,48,53,54
- 1.5 pg 108-109: 1-3,5,7-9,11,15,18,31
- Determine whether the following function is continuous and/or differentiable at $x = -2$:
$$g(x) = \begin{cases} 12x + 16 & \text{for } x < -2 \\ x^3 & \text{for } x \geq -2 \end{cases}$$
- 1.6 pg 114-115: 5,18,26,28,43
- 1.7 pg 120-121: 15,16,23,27
- 1.8 pg 129-131: 7,14,18,24