Review 2 Math 161

Any term in **bold face** know the definition well enough to state it on the test. The definition you give should be very similar to the one in the book or one with similar detail.

Section 3.3 **derivatives of trig functions** be able to use the limit definition of derivative to find the derivative of $\sin(x)$ and $\cos(x)$. Be able to use the quotient rule to find the derivative of $\tan(x)$ and $\sec(x)$.

Sample problems: Example 4, exercises 18,23,39

Section 3.4 **chain rule** be able to apply chain rule u^n, a^x

Sample problems: exercises 11,25,47,55

Section 3.5 implicit differentiation, use implicit to find derivatives of inverse trig functions,

Sample problems: Example 1, exercise 17,33,45

Section 3.6 $\frac{\mathbf{d}(\ln(\mathbf{u}))}{\mathbf{dx}}$, logarithmic differentiation, $\lim_{n\to\infty}(1+\frac{1}{n})^n = e$

Sample problems: exercises 13,16,20,41,43

Section 3.7 **average rate of change, velocity, acceleration, growth rate**

Sample problems: Example 4,5,6 exercises 8,24,35

Section 3.8 Be able to solve and interpret $\frac{dy}{dt} = ky$, Population growth, half-life, Newton's law of cooling, compound interest

Sample problems: Example 1-4,

Section 3.9 related rates strategy page 243

Sample problems: Example 2,3 exercises 22,24

Section 3.10 **linear approximation,** $L(x)$, **differential** $dy = f'(x)dx$, $\mathbf{\Delta y} = \mathbf{f(x + \Delta x)} - \mathbf{f(x)}$, be able to identify on graph

Sample problems: Example 4 exercises 5,11,19

Section 3.11 **hyperbolic and inverse hyperbolic trig functions**, be able to prove simple identities like Example 1, be able to use chain and quotient rule to derive derivatives,

Sample problems: Example 3,4 exercises 24,26