MA 242 Test 2 Review Sheet

Section 2.3 Fundamental Quantities Associated with a Curve
Find the tangent vector and unit tangent vector
Be able to find the angle between two curves
Be able to find arc length
Examples p. 68: 9 also look over in-class examples, webassign, and the Arc Length Worksheet

Section 2.4 Curvature, Torsion, and the Osculating Plane
I'll give you the formulas on p. 80 if you need them
Examples p. 83: 3,7,11

Section 3.1 Real-valued Multivariable Functions
Be able to find the domain of functions of 2 or 3 variables
Given a function of 2 variables draw multiple level curves
Use traces to reconstruct the graph of a surface
Examples p. 25: 1,5,7, problems from in class and webassign

Section 3.2 Limits and Continuity:
Be able to show a limit does not exist
Know the definition of continuity
Be able to find the limit of a function when it exists
Examples p. 24: 1,11,13,15,17,18 (without hint),19,20. Also look at the Limits Worksheet

Section 3.3 Partial Derivatives:
Know Clairaut's Theorem
Be able to take partial derivatives Partial Derivatives Worksheet
Know how to find the equations of the tangent plane and the normal line
Examples p. 48: 1,5,9,11,14,17,19

Section 3.4 Differentiability of Multivariable Functions:
Be able to find a linear approximation to f at a point
Understand how the equation for the tangent plane relates to the equation of linear approximation
Examples p. 60: 3,9,12,13

Section 3.5 Directional Derivatives and the Gradient Vector

Be able to find the derivative of f in the direction of a vector v, be able to take the derivative in the direction from a point P to Q

Know how to maximize the directional derivative

See the Worksheet on Directional derivatives

Understand the different cases of the chain rule and the different ways we can apply it

Examples p. 85: 7,8,9,10,11,17,19,21,23 Also look over the examples from in class and webassign

Section 3.6 Optimization

Know the 2nd Derivative Test

Be able to identify local maxs, mins, and saddle points
(Refer to the Worksheet on Max/Min)

Know how to find global max and min values on a closed bounded set D
(See the Worksheet on Absolute Max/Min)

Examples p. 24: 3,5,11,13,15. Also look over in class examples