Review for Test 1

Mat 229

New Places and New Things: Vectors:

: Equations of axes, coordinate planes Length (magnitude), making unit vectors

Distance formula Operations (+-, scal. mult.) and interpretations

Spheres Products (Formulas and properties)

Lines (3 forms) Dot, Cross

Planes Projections

-oids

Intersections of these

Functions

Vector functions:

Graphing space curves (what surface does it lie on?)

Derivatives (how to take, interpret)

Tangent lines to space curves

Functions of several variables:

Pictures:

Graph of

Level sets of or of

Partial derivatives, higher order derivatives, Clairout’s theorem (do not need to state)

Differentials

Chain Rules

Implicit differentiation

Gradients: How to take, use in directional derivatives, relationship to level sets

Tangents:

Line to space curve

Plane to a graph of

Line to a level set of

Plane to a level set of w

Things to memorize

Definitions (these are all limit definitions of derivatives):

Formulas:

Distance between points

Vector projection

Differentials

Chain Rules

Implicit differentiation