INFORMATION FOR MIDTERM 1

• 45-minute long and start right at the beginning, so don’t be late and don’t waste time. There should be 4-5 problems each of which has several smaller questions.

• Generally speaking, this exam covers sections 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 12.1, 12.2, 12.3, and 12.4 in APEX (these correspond to sections 12.1, 12.2, 12.3, 12.4, 12.5, 14.1, 14.2, 14.3, and 14.4 in Stewart). More precisely, it covers concepts in the “filled notes” and any extra notes (only one now, namely extra-week3) from the beginning to Oct 5 except Multivariable Chain Rule. Therefore topics such as angles between 2 planes, angles between planes and lines, tangent plane of the graph $z = f(x, y)$, and linear approximations are included although they are not treated in APEX.

• While Multivariable Chain Rule is not included, you must know the chain rule for one variable functions (for instance, the example $u(x, t) = f(x - 3t)$ in the note Sep30).

• List of general topics: distance, circles, spheres, vectors, dot product, cross product, lines, planes, traces in $x$, $y$, and $z$ of surfaces, cylinders, some rough knowledge of quadric surfaces (see below), multivariable functions (domain, range, level curves), partial derivatives, tangent plane of graph $z = f(x, y)$, linear approximation, and differentials.

• Skip the following: force, work, torque, surfaces of revolution, limits, continuity, and differentiability. I will not ask crazy questions (like WeBWorK) involving 3-d pictures of quadric surfaces or graphs of complicated functions. But you must be able to roughly visualize the surfaces (which will be useful for triple integration) and identify traces/level curves from the given equations.

• Bring your student ID. Notes and calculators are NOT allowed, all electronic devices must be turned off. Academic misconduct (aka cheating) will be dealt with very seriously.