## Calc 3, Assignment 28

1. Please state:

1. What is Green’s Theorem?
2. What is Gauss’ Theorem? What is its alternate name?
3. For what type of surface can you apply the Divergence theorem?
4. Find the following **surface areas**:
5. of the plane  above the rectangle  and 
6. of the cylinder  above the triangle bounded by , , and 
7. of the surface  above the circle 

# 3. Evaluate the following 3D volume integrals:

1. , where B is the rectangular box given by
2. , where E is the solid tetrahedron bounded by the planes *x = 0, y = 0, z = 0*, and *x + y + z = 1*
3. , where E is the region bounded by and

# 4. Find the following integrals. You may use Maple to help you out.

1. Find the surface integral ****, where S is the surface **** such that x is between 0 and 2 and y is between 0 and 4.
2.  where S is the first-octant portion of the cylinder  between x = 0 and x = 4
3. The flux of the vector field , where S is the portion of the surface between the coordinate planes.
4. The flux of the vector field  through the surface given by potion of the paraboloid  that lies above the xy-plane. Note that this surface is *not* closed.
5. Evaluate the flux integral where  and S is the closed surface given by  above the xy-plane together with the “lid” .
6. Evaluate the flux integral where  and S is 