Hw 10

1. pp. 171-173, problems 7,8,9.
2. Find the surface area of the sphere of radius R.
3. Compute
$$\int_S (x^2 + y^2) dA$$
where S is given by $x^2 + y^2 + z^2 = 1$ and dA is surface measure.
4. Find the mass of the SURFACE of the cube $0 < x < 1, 0 < y < 1, 0 < z < 1$ if the density on the surface is given by xyz.
5. Find the flux of the vector-field (x^2, y^2, z^2) across the surface of the sphere S given by $x^2 + y^2 + z^2 = 1$.
6. Apply Stokes' theorem to compute
$$\int_C (y + z)dx + (z + x)dy + (x + y)dz$$
where C is the curve obtained as intersection of two surfaces: $x^2+y^2+z^2 = 1$ and $x + y + z = 0$.
7. Use divergence theorem to compute the flux of the vector-field (x^2, y^2, z^2) over the surface of the cube $0 < x < 1, 0 < y < 1, 0 < z < 1$.
8. Use divergence theorem to compute the flux of the vector-field (x^2, y^2, z^2) over the FULL surface of the cone given by $\sqrt{x^2 + y^2} \leq z \leq 1$.