

Name

**Makeup homework for low quiz scores
PH361**

1. Derive an expression for the area of a circular disc of radius R summing infinitesimal areas.
2. Derive an expression for the area of a sphere of radius R summing infinitesimal areas.
3. Derive an expression for the volume of a sphere of radius R summing infinitesimal volumes.
4. Find an expression for $\vec{r} - \vec{r}'$ for a charge located on the surface of a sphere at coordinates radius R , $\theta = \theta_0$ and $\phi = \phi_0$ and a point at (x,y,z) . Express the result in terms of cartesian unit vectors.
5. Write an expression for the $d\vec{A}$ vectors at the 4 surfaces in homework problem 1.53.
6. Write an expression for the line integral of the vector function $\vec{v} = x^2y\hat{x} - \sqrt{y}\hat{y}$ along the line given by $y = ax^3$ from $x = 1$ to $x = 4$.