MAT 531 SPRING 16 HOMEWORK 10

Due Tuesday, Apr 19

1 - 4. Do Problems 3, 4, 7, 31 in Spivak, Ch. 7

5. Consider the form $\omega = -zdy \wedge dz + xdx \wedge dy$ on $\mathbb{R}^3$.
(a). Compute the integral

$$\int_{S^2(1)} \omega,$$

where $S^2(1)$ is the unit sphere in $\mathbb{R}^3$ and use standard spherical coordinates $\sigma(u, v) = (\cos u \cos v, \sin u \cos v, \sin v)$ on $S^2(1)$ to compute your answer.
(b). Compute $d\omega$ and

$$\int_{B^3(1)} d\omega,$$

where $B^3(1)$ is the unit ball in $\mathbb{R}^3$. (Your answers in (a) and (b) should be the same).