

Name:

Homework 6, due Mon 9/16/2013.

(1) Transform the following vectors into cylindrical coordinates:

$$\vec{A} = \hat{x}(y - x) + \hat{y}(x - y)$$

$$\vec{B} = \hat{R} \sin \theta + \hat{\theta} \cos \theta + \hat{\phi} \cos^2 \varphi$$

(2) Transform the following vectors into spherical coordinates:

$$\vec{A} = \hat{y}(x^2 + y^2 + z^2) - \hat{z}(x^2 + y^2)$$

$$\vec{B} = \hat{r} \cos \varphi - \hat{\phi} \sin \varphi + \hat{z} \cos \varphi \sin \varphi$$
