

- Using the spherical coordinate, compute the divergence of the function
$$\vec{v} = r \sin \theta \hat{r} + r \cos \theta \cos \phi \hat{\theta} + r \cos \theta \sin \phi \hat{\phi}.$$
- Check the divergence theorem for this function, using as your volume the inverted hemispherical bowl of radius R , resting on the x - y plane and centered at the origin. See the Figure.

