EECS 221

S.P. 2-C

Find a vector **B** that is perpendicular to the vector $\mathbf{A} = -4\hat{\mathbf{a}}_x + 2\hat{\mathbf{a}}_y - 3\hat{\mathbf{a}}_z$ that has a magnitude of 2 and has a z component of value 1.

S.P. 2-D

It is known that the vector field **A** has the same magnitude and direction at all points in space and is represented in Cartesian coordinates as: $\mathbf{A} = 3\hat{\mathbf{a}}_x - 2\hat{\mathbf{a}}_y - 5\hat{\mathbf{a}}_z$. Find the representation of **A** at any point in space using:

a) Cylindrical coordinates
b) Spherical coordinates

S.P. 2-E

A vector field **V** has a value $\mathbf{V(r)} = \frac{1}{\rho}\hat{\mathbf{a}}_\rho$ at all points in space. Find the expression for **V** at an arbitrary point using the Cartesian coordinate system.