Special Problem 2.5-26

There exists throughout space a **vector field**:

$$\mathbf{A}(\bar{r}) = z\,\hat{\mathbf{a}}_r + \left(z^2 - \cos\phi\right)\hat{\mathbf{a}}_\theta + \left(\rho z - \sin^2\phi\right)\hat{\mathbf{a}}_\phi$$

There also exists in space some **contour** *C*.

Contour *C* is a **complete circle**!

At some **arbitrary** point P_a **on** contour *C*, the vector field has the discrete value:

$$\mathbf{A}(\bar{r} = \bar{r}_a) = 2\,\hat{\mathbf{a}}_r + 3\,\hat{\mathbf{a}}_\theta + 6\,\hat{\mathbf{a}}_\phi$$

At some **other** arbitrary point P_b **on** contour *C*, the vector field has the discrete value:

$$\mathbf{A}(\bar{r} = \bar{r}_b) = 2\,\hat{\mathbf{a}}_r + 4\,\hat{\mathbf{a}}_\theta + 5\,\hat{\mathbf{a}}_\phi$$

Describe **mathematically** this contour *C*.