Special Problem 2.4-9

Consider the vector field:

$$\mathbf{A}(\bar{r}) = (y-3)\,\hat{a}_x + z^3\,\hat{a}_y + (x+y)\,\hat{a}_z$$

which describes the magnitude and direction of vector quantity **A** at **every** point in space!

1. Determine the magnitude ($|\mathbf{A}|$) and direction ($\hat{a}_A$) of the vector quantity **A** at the **specific point** denoted by **position vector**:

$$\bar{r}_1 = 2\,\hat{a}_x + 4\,\hat{a}_y - 3\,\hat{a}_z$$

2. Say we know that **at** the specific point denoted by position vector $\bar{r}_2$ (where $\bar{r}_2 \neq \bar{r}_1$), the vector quantity **A** is equal to:

$$\mathbf{A}(\bar{r}_2) = 7\,\hat{a}_x - 8\,\hat{a}_y$$

Determine the position vector $\bar{r}_2$.