

**Special Problem 2-4.19**

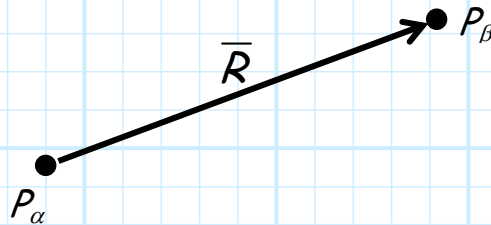
The location of point  $P_\alpha$  is denoted with position vector:

$$\bar{r}_\alpha = 2 \hat{a}_x + \hat{a}_y + 3 \hat{a}_z.$$

The location of some other point  $P_\beta$  is denoted with position vector  $\bar{r}_\beta$ .

We know that the **directed distance**  $\bar{R}$  from point  $P_\alpha$  to point  $P_\beta$  is:

$$\bar{R} = 2 \hat{a}_x + 3 \hat{a}_y - 3 \hat{a}_z.$$



Using **cylindrical coordinates**, express the location of point  $P_\beta$ .