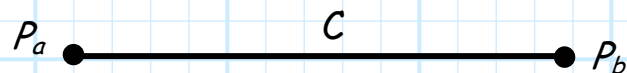


Special Problem 2-5.22

There exists a **vector field**:

$$\mathbf{A}(\bar{r}) = x^3 \hat{a}_\rho + xy \hat{a}_\phi + (x+z)y \hat{a}_z$$

There also exist some **contour** C , which is a **straight line** between points P_a and P_b .



The discrete vector value of $\mathbf{A}(\bar{r})$ at point P_a is:

$$\mathbf{A}(\bar{r} = \bar{r}_a) = 8 \hat{a}_\rho + 2 \hat{a}_\phi + 3 \hat{a}_z$$

The discrete vector value of $\mathbf{A}(\bar{r})$ at point P_b is:

$$\mathbf{A}(\bar{r} = \bar{r}_b) = 8 \hat{a}_\rho + 8 \hat{a}_\phi + 12 \hat{a}_z$$

Describe **mathematically** this contour C .