

Special Problem 4-6.5

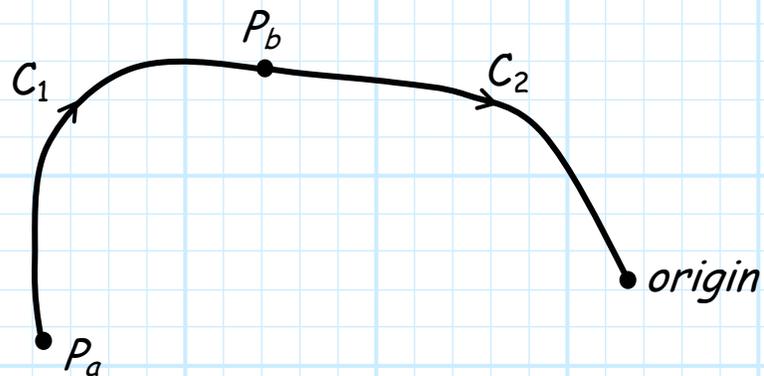
The **electric potential** within some region is:

$$V(\vec{r}) = x^2 + yz \quad [\text{V}]$$

Consider **two contours** in this same region:

The **first contour** (C_1) extends from point P_a , located at $\vec{r}_a = 3\hat{a}_x - \hat{a}_y + 2\hat{a}_z$, to some point P_b .

The **second contour** (C_2) extends from point P_b to the origin.



If the integration of the **electric field** along the **second contour** C_2 is:

$$\int_{C_2} \mathbf{E}(\vec{r}) \cdot \overline{d\ell} = 2.5 \text{ V}$$

Determine the value of the integration along the **first contour** C_1 :

$$\int_{C_1} \mathbf{E}(\vec{r}) \cdot \overline{d\ell}$$