

Special Problem 2-5.7

Vector $\mathbf{A}(\bar{\mathbf{r}}) = \nabla g(\bar{\mathbf{r}})$, where:

$$g(\bar{\mathbf{r}}) = (x^2 + y^2)z$$

We know that the contour integral

$$\int_C \mathbf{A}(\bar{\mathbf{r}}) \cdot d\bar{\ell} = 15,$$

where the contour C **begins** at point $P_1(x=1, y=2, z=1)$, and **ends** at point P_2 .

If point P_2 is located a distance of 5 units **above** the x - y plane, how **far** is point P_2 from the **z -axis**?