Special Problem 2-5.7

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

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

We know that the contour integral

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

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?**