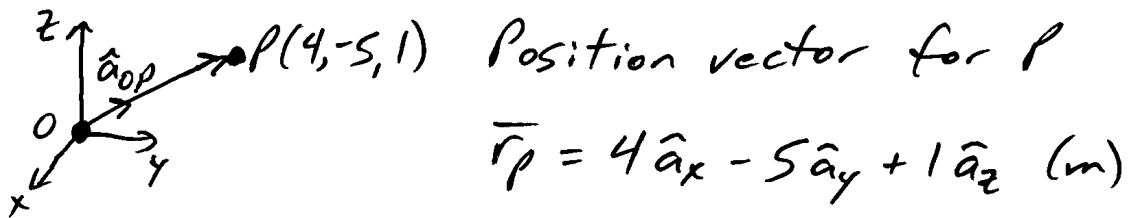


- 1.1 Determine the unit vector along the direction OP , where O is the origin and P is point $(4, -5, 1)$.



$$|\vec{r}_p| = \sqrt{\vec{r}_p \cdot \vec{r}_p} = \sqrt{4^2 + (-5)^2 + 1^2} = \sqrt{42} \text{ (m)}$$

$$\hat{a}_{op} = \frac{\vec{r}_p}{|\vec{r}_p|} = \frac{4\hat{a}_x - 5\hat{a}_y + 1\hat{a}_z}{\sqrt{42}}$$

$$\underline{\underline{\hat{a}_{op} = 0.6172\hat{a}_x - 0.7715\hat{a}_y + 0.1543\hat{a}_z}}$$