

5.1) from 5.1, $\vec{\theta} \parallel \vec{v}(0, 2, 2)$
③

$$\text{let } \vec{\theta} = \lambda(0, 2, 2) \text{ ————— } \textcircled{A}$$

Now, from the question, margin is $\frac{1}{\|\theta\|}$ ———— ①

from 5.2 margin is $\sqrt{2}$ ———— ②

from ① & ② —

$$\frac{1}{\|\theta\|} = \sqrt{2}$$

$$\sqrt{(0 \times \lambda)^2 + (2\lambda)^2 + (2\lambda)^2} = \frac{1}{\sqrt{2}}$$

$$\sqrt{8\lambda^2} = \frac{1}{\sqrt{2}}$$

$$16\lambda^2 = 1$$

$$\lambda^2 = \frac{1}{16}$$

$$\boxed{\lambda = \pm \frac{1}{4}} \text{ ————— } \textcircled{3}$$

from (A) -

$$\Theta = \pm \frac{1}{4} (0, 2, 2)$$

$$\boxed{\Theta = (0, \frac{1}{2}, \frac{1}{2})} \text{ or } (0, -\frac{1}{2}, -\frac{1}{2})$$

Ans.

→ This is not possible.

Please refer 5.4.