Step-1

We have to fill in the following blanks.

Suppose **L** is a one dimensional subspace (a line) $\mathbf{R}^3$. Its orthogonal complement $\mathbf{L}^{\perp}$ is the _____ perpendicular to **L**. Then $\left(\mathbf{L}^{\perp}\right)^{\perp}$ is a _____ perpendicular to $\mathbf{L}^{\perp}$.In fact $\left(\mathbf{L}^{\perp}\right)^{\perp}$ is the same as ____ .

Step-2

Suppose **L** is a one dimensional subspace (a line) $\mathbf{R}^3$. Its orthogonal complement $\mathbf{L}^{\perp}$ is the two- dimensional subspace (a plane) in R^3 perpendicular to **L**. then $\left(\mathbf{L}^{\perp}\right)^{\perp}$ is a one-dimensional subspace (a line) perpendicular to $\mathbf{L}^{\perp}$.In fact $\left(\mathbf{L}^{\perp}\right)^{\perp}$ is the same as **L**.