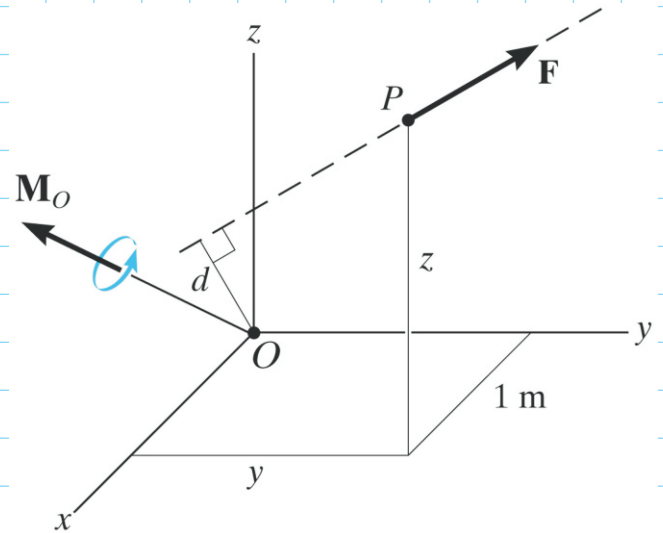
**PROBLEM AP-19****GIVEN:**

A force of $\mathbf{F} = \{6\mathbf{i} - 2\mathbf{j} + 1\mathbf{k}\}$ kN produces a moment of $\mathbf{M}_O = \{4\mathbf{i} + 5\mathbf{j} - 14\mathbf{k}\}$ kN·m about the origin of coordinates, point O . If the force acts at a point having an x coordinate of $x = 1$ m, determine the y and z coordinates.

REQUIRED:**SOLUTION:****SOLUTION**

$$\mathbf{M}_O = \mathbf{r} \times \mathbf{F}$$

$$4\mathbf{i} + 5\mathbf{j} - 14\mathbf{k} = \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ 1 & y & z \\ 6 & -2 & 1 \end{vmatrix}$$

$$4 = y + 2z$$

$$5 = -1 + 6z$$

$$-14 = -2 - 6y$$

$$y = 2 \text{ m}$$

$$z = 1 \text{ m}$$