components,while x,y,z (coordinates of P) are scalar components of $\vec{OP}$.

Let

$$\vec{OP}_1 = x_1 i + y_1 j + z_1 k = [x_1 \quad y_1 \quad z_1]^T$$

$$\vec{OP}_2 = x_2 i + y_2 j + z_2 k = [x_2 \quad y_2 \quad z_2]^T$$

Then we have

$$\vec{OP}_1 + \vec{OP}_2 = (x_1 + x_2)\, i + (y_1 + y_2)\, j + (z_1 + z_2)\, k = [x_1 + x_2 \quad y_1 + y_2 \quad z_1 + z_2]^T$$

by properties of projections.

Also

$$\vec{OP}_1 - \vec{OP}_2 = (x_1 - x_2)\, i + (y_1 - y_2)\, j + (z_1 - z_2)\, k = [x_1 - x_2 \quad y_1 - y_2 \quad z_1 - z_2]^T$$

Accordingly any free vector $\vec{AB}$ extending from the point $A\,(a_1, a_2, a_3)$ to $B\,(b_1, b_2, b_3)$ can be written as the position vector

$$\vec{OB} - \vec{OA} = (b_1 - a_1, b_2 - a_2, b_3 - a_3)$$

since $\vec{OA} + \vec{AB} = \vec{OB}$ or $\vec{AB} = \vec{OB} - \vec{OA}$.

When a vector is multiplied by a scalar,its all components being multiplied by the same scalar,we have

$$\lambda \vec{P} = \lambda\,(x, y, z) = (\lambda x, \lambda y, \lambda z)$$

by the properties of projections.

Observe analogy between matrices and vectors in the operation of addition and multiplication by scalars:

$$[a_1 \quad a_2 \quad a_3] \pm [b_1 \quad b_2 \quad b_3] = [a_1 \pm b_1 \quad a_2 \pm b_2 \quad a_3 \pm b_3]\,,$$

$$\lambda\,[a_1 \quad a_2 \quad a_3] = [\lambda a_1 \quad \lambda a_2 \quad \lambda a_3]\,.$$