Answer on Question #46177 – Math – Vector Calculus

Problem.

Find the vector method the horizontal force and the force inclined at an angle of 60° to the vertical whose resultant is vertical force p.

Solution:

Suppose that we should find the horizontal force $\vec{a}$ and the force $\vec{b}$ inclined at an angle of 60° to the vertical.

The force $\vec{a}$ is projection of $\vec{p}$ onto the direction of force $\vec{a}$. The force $\vec{b}$ is projection of $\vec{p}$ onto the direction of force $\vec{a}$.

To find the projection of $\vec{p}$ onto the direction of force $\vec{a}$ we should build the line a_1 parallel to the direction of the force $\vec{a}$ that passes through the start of $\vec{p}$ and the line b_2 parallel to the direction of the force $\vec{b}$ that passes through the end of $\vec{p}$. The start of $\vec{a}$ will be at the start of $\vec{p}$ and the end of $\vec{a}$ will be at the point of intersection of the lines a_1 and b_2.

To find the projection of $\vec{p}$ onto the direction of force $\vec{b}$ we should build the line b_1 parallel to the direction of the force $\vec{b}$ that passes through the start of $\vec{p}$ and the line a_2 parallel to the direction of the force $\vec{a}$ that passes through the end of $\vec{p}$. The start of $\vec{b}$ will be at the start of $\vec{p}$ and the end of $\vec{b}$ will be at the point of intersection of the lines b_1 and a_2.