Answer on Question #70993 – Math – Calculus

Question

Let $\vec{u} =< 5, 6 >, \vec{v} =< -2, -6 >.$ Find $-2\vec{u} + 5\vec{v}$.

Solution

The two operations can be defined in the following way:

$\vec{a} =< a_1, a_2 >, \vec{b} =< b_1, b_2 > => \vec{a} + \vec{b} =< a_1 + b_1, a_2 + b_2 >;$

$\vec{a} =< a_1, a_2 >, s$ is a number $=> s\vec{a} =< sa_1, sa_2 > .$

Then

$-2\vec{u} =< -2(5), -2(6) >=< -10, -12 >;$

$5\vec{v} =< 5(-2), 5(-6) > =< -10, -30 >;$

$-2\vec{u} + 5\vec{v} =< -10 + (-10), -12 + (-30) >;$

$-2\vec{u} + 5\vec{v} =< -20, -42 >.$

Answer: $-2\vec{u} + 5\vec{v} =< -20, -42 >.$