Definition (Vector Operations)

Let $\underline{u} = \langle u_1, u_2 \rangle$ and $\underline{v} = (v_1, v_2)$ be any 2 vectors in the plane, and let c be a scalar. We make the following definitions.

① vector Sum : $\underline{u} + \underline{v} = \langle u_1 + v_1, u_2 + v_2 \rangle$

② Scalar Multiple : $c\underline{u} = \langle cu_1, cu_2 \rangle$

③ Negative of a vector : $-\underline{v} = (-1)v = \langle -v_1, -v_2 \rangle$

④ vector difference : $\underline{u} - \underline{v} = \underline{u} + (-\underline{v}) = \langle u_1 - v_1, u_2 - v_2 \rangle$

COMMENT: As of right now, we haven't defined a way of multiplying two vectors. But we will learn two ways of doing this: One is called the DOT PRODUCT $(\underline{u} \cdot \underline{v})$ and the other is called the CROSS PROT $(\underline{u} \times \underline{v})$