Multilinear functions.

Let V_1 and V_2 and W be vector spaces. A map $f : V_1 \times V_2 \to W$ is called bilinear etc

Suppose that $\tau \in V^*$ and $\theta \in W^*$; that is τ and θ are linear real-valued functions on V and W, respectively. Then we obtain a bilinear real-valued Function

$$\tau \otimes \theta : V \times W \to R$$

by the formula

$$\tau \otimes \theta(v, w) = (\tau v)(\theta w)$$

This bilinear function is called the tensor product of τ and θ.