

$$x \cdot \text{[Diagram of } \mathbf{a} \text{ with } \varphi \text{]} + y \cdot \text{[Diagram of } \mathbf{a}' \text{ with } \varphi' \text{]} = \text{[Diagram of } \mathbf{a}'' \text{ with } \varphi'' \text{]} \quad \varphi'' = x \cdot \varphi + y \cdot \varphi'$$

The diagram illustrates a linear combination of two objects in a vector space. Each object is represented by a cyan ring with a black center and a small black square at the top. The first object, labeled \mathbf{a} , has a red-to-white gradient on its right side, labeled φ . The second object, labeled \mathbf{a}' , has a red-to-white gradient on its right side, labeled φ' . The resulting object, labeled \mathbf{a}'' , has a red-to-white gradient on its right side, labeled φ'' . The equation shows that the linear combination of the first two objects equals the third object, with the corresponding gradient labels combined linearly: $\varphi'' = x \cdot \varphi + y \cdot \varphi'$.