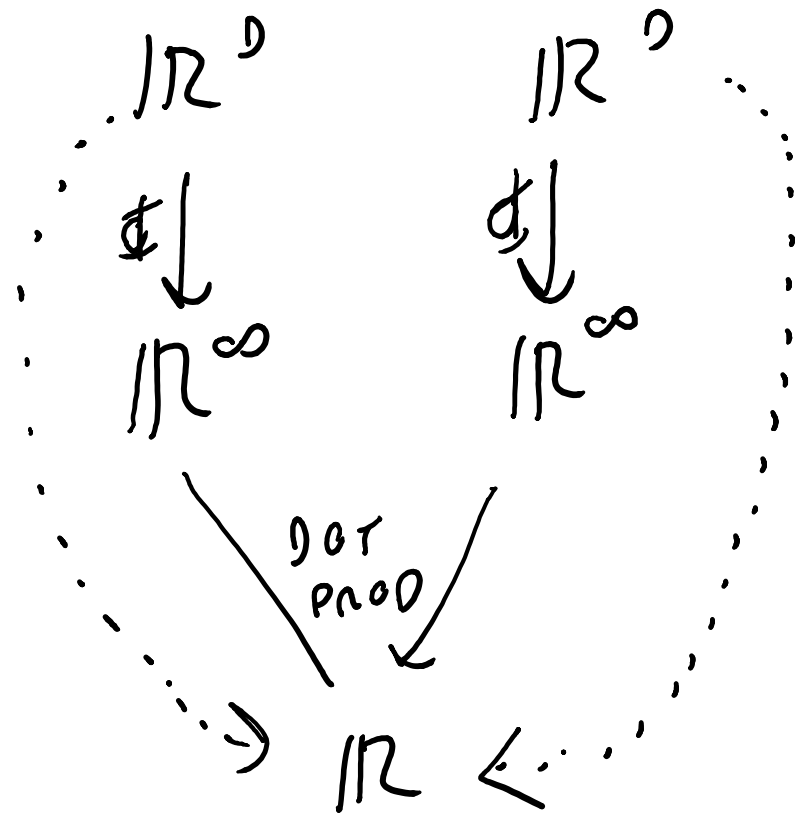


$$\text{SAR}(\omega^T \cdot \Phi(x) + b)$$

$$\left[ \sum_{i \in S} \alpha_i \cdot y_i \cdot \Phi(x_i) \right]^T \cdot \Phi(x) + b$$

$$= \sum_{i \in S} \alpha_i \cdot y_i \cdot \underbrace{\Phi^T(x_i) \cdot \Phi(x)}_{K(x_i, x)} + b$$

$$\omega^* = \sum_{i \in S} \alpha_i \cdot y_i \cdot \Phi(x_i)$$



$$K(x_i, x_i) \in \mathbb{R}$$

Diagram showing the mapping from  $\mathbb{R}^D$  to  $\mathbb{R}$  via the kernel function  $K(x_i, x_i)$ .