



$$D_3^2 = D_1^2 + D_2^2$$

$$\text{initial variance} = \text{remaining variance} + \text{lost variance}$$

$$\| \mathbf{a}_i \|^2 = \| w_i \mathbf{c} \|^2 + \| \mathbf{a}_i - w_i \mathbf{c} \|^2$$

this is constant maximize this or minimize this