$$k(x_i, x_j) = (< x_i, x_j > + 1)^b$$

$$b = 2$$

$$\Rightarrow k(x_i, x_j) = (< x_i, x_j > + 1)^2$$

$$= < x_i, x_j >^2 + 1 + 2 < x_i, x_j >$$

$$\underline{} = \sum_k x_i^{(k)} x_j^{(k)}$$

$$\underline{} = x_i^0 \cdot x_j^0$$

$$\underline{} = \left(\sum_k x_i^{(k)} x_j^{(k)} \right)^2$$

$$= \sum_{u,v} \left(x_i^{(u)} x_i^{(v)} \right) \cdot \left(x_j^{(u)} x_j^{(v)} \right)$$

break _ _ _ down
into products between x_i, x_j.

$$f(x) = \left[x^0, \; x^{(1)} \cdots x^{(d)}, \; \forall_{uv} \; x^{(u)} x^{(v)} \right]$$

0th order   1st order   2nd order