$$d = \left|\left|x^{(i)} - x^{(i)\prime}\right|\right|^2 = \sqrt{\sum_{i=1}^{d}(x^{(i)} - x^{(i)\prime})^2} = \sqrt{x^T x' - 2x^T x' + x'^T x'}$$

To satisfy Mercer condition, formulate the $k-$ *nearest neighbor algorithm by squaring the Euclidean distance. Then have*:

$$k\left(x^{(i)}, x^{(i)\prime}\right) = x^T x' - 2x^T x' + x'^T x'$$