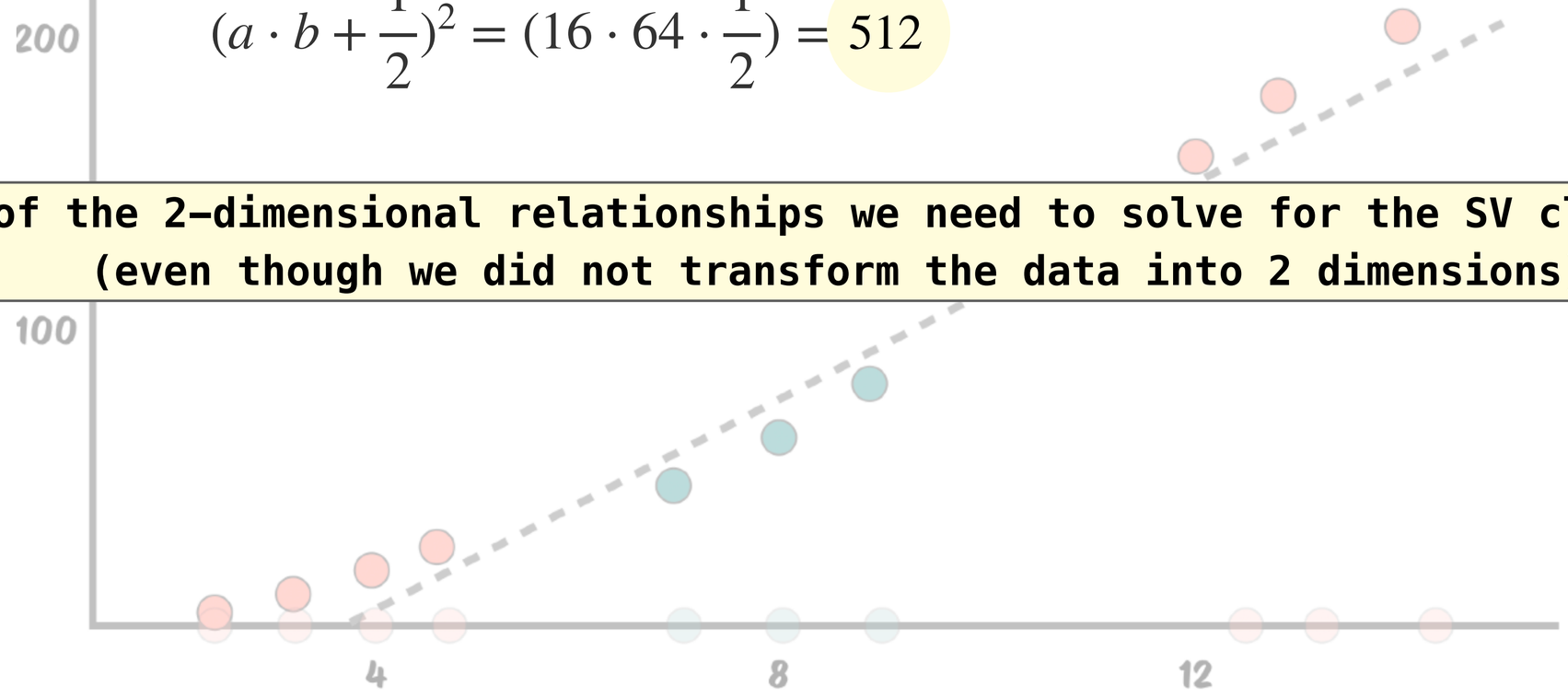
The Polynomial Kernel

A function that computes the relationship between vectors in multiple dimensions
(without actually having to calculate the coordinates for those dimensions)

example: $a = 4,\ b = 8$

plug values into the Kernel to get
the high-dimensional relationship

$$(a \cdot b + \frac{1}{2})^2 = (16 \cdot 64 \cdot \frac{1}{2}) = 512$$



one of the 2-dimensional relationships we need to solve for the SV classifier
(even though we did not transform the data into 2 dimensions)

The Radial Kernel (RBF)

The **Radial Kernel**

$$K(a, b) = e^{-\gamma}(a - b)^2$$

projects to **infinite dimensional** space

works similar to nearest neighbors classifier