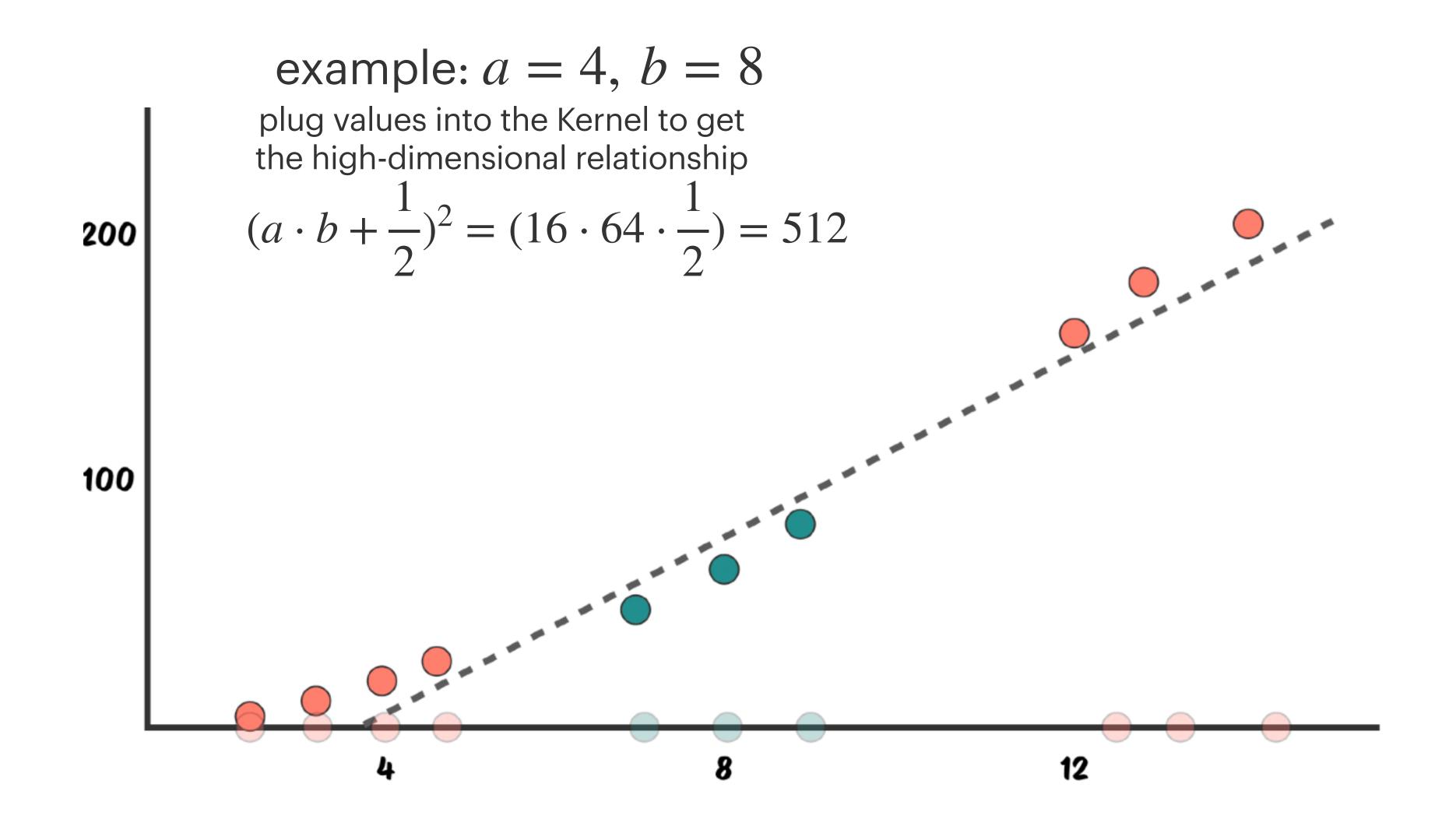
## The Polynomial Kernel

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



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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)

