

Convolution example, convolution of two functions is really the continuous analog of polynomial multiplication

$$(x^2 + 2x + 3) \cdot (2x^2 + x + 3) =$$

If we want to find the total number of x^2 , we will write $h(x) = \sum_{k=0}^2 x_k \cdot y_{x-k}$

$K + x - k = x$, basically we are summing all the possible combinations that can lead us to x in this function.

This is the discrete version, thus, if we change it to continuous, it will become integral, and we step through all possible combinations.