CS- 335 / 337 Assignment -4

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Q-1.1). → Property -1 (Proved in class)

If K_1, K_2 are Kernels, then $\alpha_1 K_1 + \alpha_2 K_2$ is also a kernel $\forall \alpha_1, \alpha_2 \geq 0$

→ Property -2 (Proved in class)

If K_1, K_2 are kernels, then $K_1 \cdot K_2$ is also a kernel.

→ Property -3 If K is a kernel, K^d is also a kernel, $\forall d \in N$

Proof by Induction :-

Base Case, $d=1$ $K' = K$ (presumption) is a kernel.

Induction Hypothesis :- K^d is a kernel.

Induction step : To prove K^{d+1} is a kernel,

$K^{d+1} = K \cdot K^d$

Using Property 2, since K, K^d are valid kernels, then K^{d+1} is a valid kernel

Hence proved.