P10.1

The taylor expansion: $e^a = \sum_{n=0}^{\infty} \frac{a^n}{n!} = 1 + a + \frac{a}{2} + \frac{a^3}{6} + \frac{a^4}{24} + \cdots$

so $k(x, z) = e^{k_1(x,z)} = \sum_{n=0}^{\infty} \frac{1}{n!} k_1(x, z)^n$

P10.2

RBF: $k(x, z) = e^{-\alpha \|x-z\|^2} = e^{-\alpha(x^T x - 2x^T z + z^T z)} = e^{-\alpha x^T x} e^{2\alpha x^T z} e^{-\alpha z^T z}$

$f(x) = e^{-\alpha x^T x}$, we can reunite $k(x, z) = f(x) e^{2\alpha x^T z} f(z)$