# Problem 2

**25 points** Prove by **construction** that the RBF kernel *K*(*x, z*) below is a well-defined kernel.

where *x*, *z* are vectors *∈ Rd* and *σ* is a scalar *∈R*.

Hints: You want to use the 8 rules defining a well-defined kernel to construct the RBF kernel.

**Submission** Write your solution in a typeset PDF document (Word or Overleaf/Latex) and name it

**A7\_problem2.pdf** . Hand-writing will not be accepted.

Eight Rules to construct a well defined kernel

To prove by a well defined kernel matrix by construction, Create the kernel function above with these eight rules.