Answer)

1. Linear Kernel

Let us say that we have two vectors with name x1 and Y1, then the linear kernel is defined by the dot product of these two vectors:K(x1, x2) = x1 . x2

2.Polynomial Kernel

A polynomial kernel is defined by the following equation:
K(x1, x2) = (x1 . x2 + 1)d,

Where,

d is the degree of the polynomial and x1 and x2 are vectors

3.Gaussian Kernel

This kernel is an example of a radial basis function kernel. Below is the equation for this:

k(xi,xj)=exp(-gamma(||xi-xj||)^2)

The given sigma plays a very important role in the performance of the Gaussian kernel and should neither be overestimated and nor be underestimated, it should be carefully tuned according to the problem.

4)Exponential Kernel

This is in close relation with the previous kernel i.e. the Gaussian kernel with the only difference is – the square of the norm is removed.

The function of the exponential function is:

k(x,y)=exp(-((||x-y||)/(2*sigma^2)

This is also a radial basis kernel function.

5) Hyperbolic or the Sigmoid Kernel

This kernel is used in neural network areas of machine learning. The activation function for the sigmoid kernel is the bipolar sigmoid function. The equation for the hyperbolic kernel function is:

k(x,y)=tanh((alpha*x^ty)+c))

This kernel is very much used and popular among support vector machines.