**4. Explain various types of Kernels with respect to the formula**

Linear kernel:

The linear kernel is the simplest kernel and is defined as the dot product of the input vectors. It corresponds to a linear decision boundary in the original feature space.

Formula:

K(X, X’) = X.X’(X, X’ -> I/P FEATURES)

Polynomial kernel:

The polynomial kernel computes the similarity between two vectors as the polynomial of their dot product. It allows learning of nonlinear decision boundaries.

Formula:

K(X, X’) = (X, X’+c)^d

c - constants

d - degree of polynomial

Radial Basis Function kernel(RBF):

The sigmoid kernel computes the similarity between two vectors using a hyperbolic tangent function. It is often used in neural network architectures.

K(X, X’) = EXP(-||X-X’||^2 SIGMA^2)

||X-X’||^2 - Squared euclidean distance

Sigma - spreadness of kernel bandwidth