Ex 10

ML:

Regression

SLR: $y = b_0 + b_1 x_1$

MLR: $y = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_n x_n$

PR: $y = b_0 + b_1 x_1 + b_2 x_1^2 + \ldots + b_n x_1^n$

Math logic: Ordinary Least Squares.

Find b0 & bi such that

Sum $(y_i - \hat{y}_i)$ is least or minimised.

SVR: $\min \frac{1}{2} \|w\|^2 + C \sum_{i=1}^{m} (\xi_i - \xi_i^*)$

DIR: $\hat{y}_i = \frac{1}{N_i} \sum_{x_i \in R_i} y_i$

RFR: $f(x) = \frac{1}{N} \sum_{i=1}^{n} f_i(x)$

LR: $h_\theta(x) = \frac{1}{1 + e^{-\theta^T x}}$

KNN: $\hat{y}_q = \text{argmax}_y \sum_{i \in N_q} I(y_i = y)$

SVC: $\min \frac{1}{2} \|w\|^2 + C \sum_{i=1}^{m} (\varepsilon_i - \varepsilon_i^*)$

Kernel SVC:

$$\min \frac{1}{2} \|w\|^2 + C \sum_{i=1}^{N} (\varepsilon_i - \varepsilon_i^*)$$

Naive Bayes:

$$P(y = C_k | x_i) = \frac{P(y = C_k) \times P(x_i | y = C_k)}{}$$

$P(x_i)$

DTC: $\hat{y}_i = \frac{1}{N_i} \sum x_i \in R_i \, y_i$

RFC: $\hat{y}_i = \underline{\text{mode}}\left(\hat{y}_i^1, \hat{y}_i^2, \ldots, \hat{y}_i^T\right)$