

22/02/18

Data Preparation and Analysis

Homework 2

Question 1.2:-

Problem 7:-

$$P_{\text{yes}}(x) = \frac{\pi_{\text{yes}} \exp\left(-\frac{(x - \mu_{\text{yes}})^2}{2\sigma^2}\right)}{\pi_{\text{yes}} \exp\left(-\frac{(x - \mu_{\text{yes}})^2}{2\sigma^2}\right) + \pi_{\text{no}} \exp\left(-\frac{(x - \mu_{\text{no}})^2}{2\sigma^2}\right)}$$

$$P_{\text{yes}}(4) = \frac{0.8 \exp\left(-\frac{(4 - 10)^2}{2 \times 36}\right)}{0.8 \exp\left(-\frac{(4 - 10)^2}{2 \times 36}\right) + 0.2 \exp\left(-\frac{(4 - 0)^2}{2 \times 36}\right)}$$

$$P_{\text{yes}}(4) = 0.752 = 75.2\%$$

Problem 9:-

$$\text{a) odds} = \frac{P(x)}{1 - P(x)} = 0.37$$

$$\Rightarrow 1.37 P(x) = 0.37$$

$$\Rightarrow P(x) = \frac{0.37}{1.37} = 27\%$$

$$\text{b) odds} = \frac{P(x)}{1 - P(x)} = \frac{0.16}{1 - (0.16)} = \frac{0.16}{0.84} = 0.1904$$