

Model:

$$Y = 1 / (1 + e^{(-z)})$$

Where  $Z = k_0 + k_1 \cdot x_1 + k_2 \cdot x_2$

If ( $y \geq 0.5$ , student will pass the exam. Otherwise fail)

Find the value of  $K_0, k_1$  &  $k_2$  by applying logistic regression on given data.

Take initial value of  $K_0 = k_1 = k_2 = 0$  and  $\alpha = 0.001$ .

Calculate the value of  $y$  by calculating  $z$  as follows-

$$Z = 0 + 0 \cdot x_1 + 0 \cdot x_2$$

Where  $x_1$  &  $x_2$  is from given data.

Repeat this process until convergence of  $k_0, k_1, k_2$  takes place.

After 10000 iteration:

$K_0 = -3.2896940314747503$

$K_1 = 5.763351011731899$

$K_2 = 1.0885007714121313$

Decision boundary look like below:



Applying this on test data:

