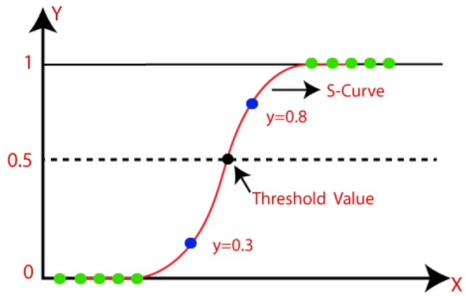
Logistic Regression in Machine Learning:

1. It is used for predicting the categorical dependent variable using a given set of independent variables.
2. The outcome must be discrete or categorical value. For example: [0 or 1], [Yes or No], [True or False] etc.
3. It gives the probabilistic values which lie between 0 or 1.
4. Logistic Regression is similar to Linear Regression except that Linear Reg. is used for solving regression problems whereas Logistic Reg. is used for solving classification problem.
5. Here we fit the "S" shape logistic function, (Sigmoid function) which predicts two max. values (0 or 1).
6. Examples: Cells are cancerous or not?
   Mouse is obese or not depending on weight? etc.
7. Logistic regression can be used to classify the observations using different types of data and can easily determine most effective variables used for classification. It uses the concept of predictive modeling as regression
8. The below image showing the logistic regression, [Sigmoid Function]



Classification type:

>> Binary classification.

Will customer buy life insurance?
1. Yes
2. No

>> Multiclass classification.

Which party a person is going to vote for?
1. Democratic
2. Republican
3. Independent

$$S(x) = \frac{1}{1+e^{-x}} = \frac{e^x}{e^x+1}$$

Euler's number

$e \sim 2.71828$

convert it to a range between 0 to 1

Linear regression → $y = m * x + b$

$$y = \frac{1}{1+e^{-(m*x+b)}}$$ ← Sigmoid function