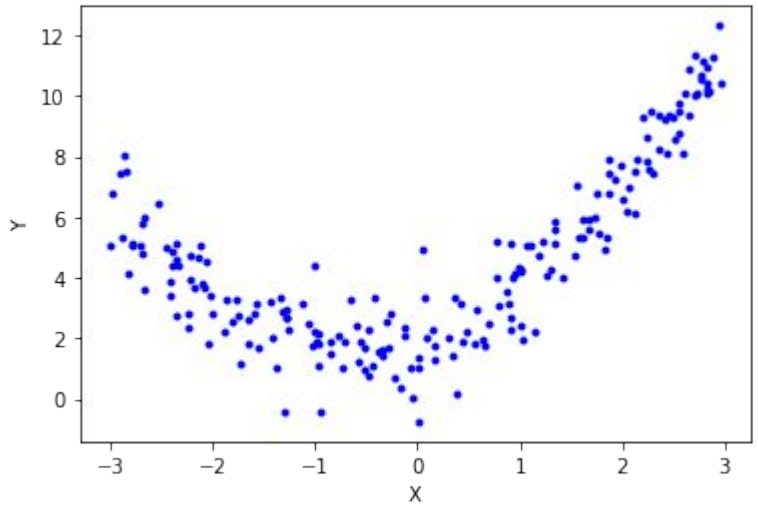
Types of Linear Regression

- Simple Linear Regression: Involves one independent variable and one dependent variable
- Multivariate Linear Regression: Extends to include multiple independent variables

Types of Linear Regression

Reading

- Polynomial Linear Regression: Allows for non-linear relationships between the dependent and independent variables by incorporating polynomial terms, enabling the model to capture non-linear patterns in the data



Types of Linear Regression

Reading

- Regularized Linear Regression: A form of linear regression that addresses multicollinearity (high correlation between independent variables) and helps mitigate overfitting by adding a penalty term to the loss function that controls the complexity of the model

  Some common regularized linear regression and corresponding loss functions are:

  - Ridge Regression: $\frac{1}{m}\sum_{i=1}^{m}(y-\hat{y})^2+\lambda\sum_{j=1}^{n}w_j^2$
  - Lasso Regression: $\frac{1}{m}\sum_{i=1}^{m}(y-\hat{y})^2+\lambda\sum_{j=1}^{n}|w_j|$
  - Elastic Net Regression: $\frac{1}{m}\sum_{i=1}^{m}(y-\hat{y})^2+r\lambda\sum_{j=1}^{n}|w_j|+\frac{1-r}{2}\lambda\sum_{j=1}^{n}w_j^2$

  where w represents the model parameters and r, λ are hyperparameters that determine the extent of penalization