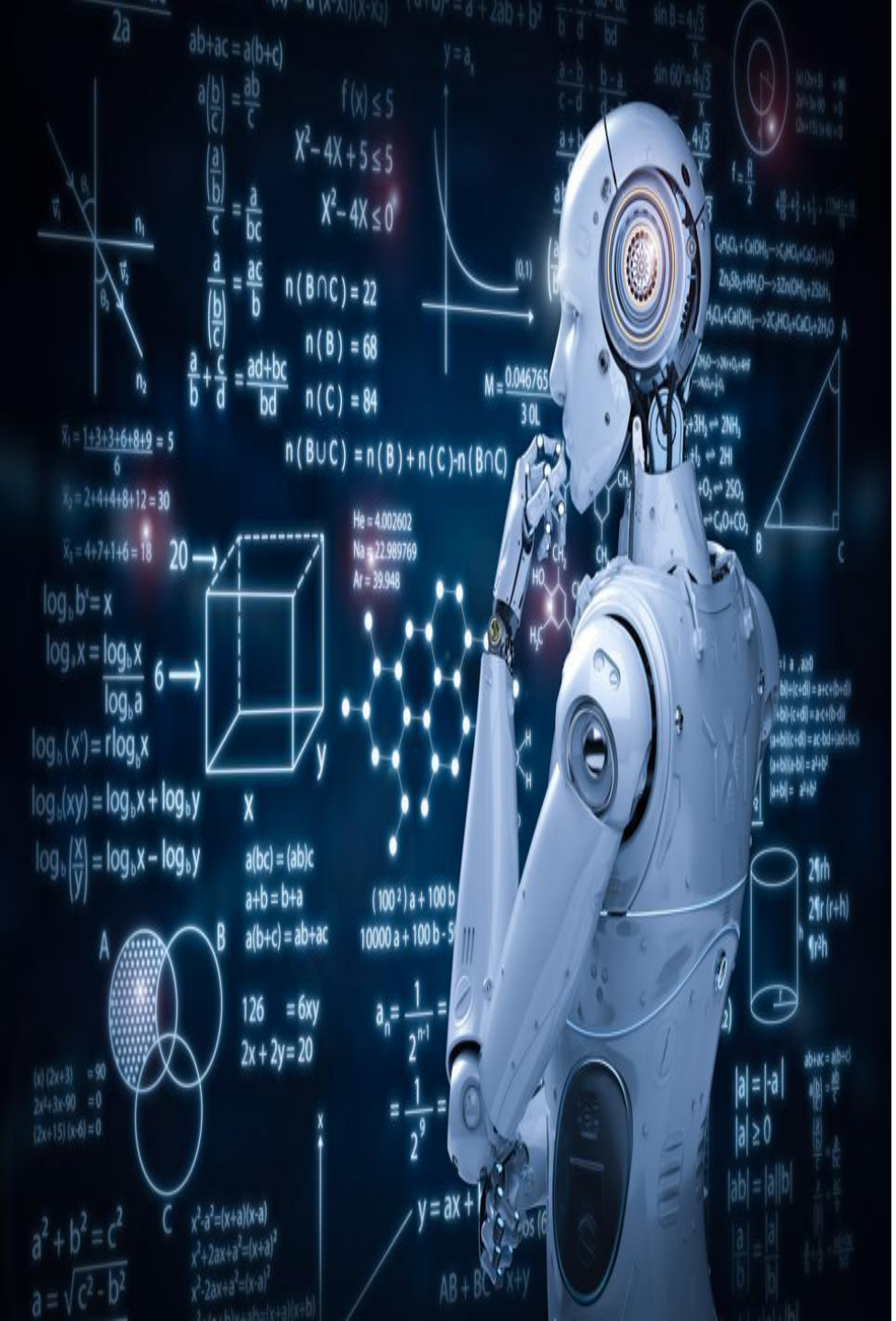


Practical Machine Learning

Day 6: Mar22 DBDA

Kiran Waghmare

Simple Linear Regression

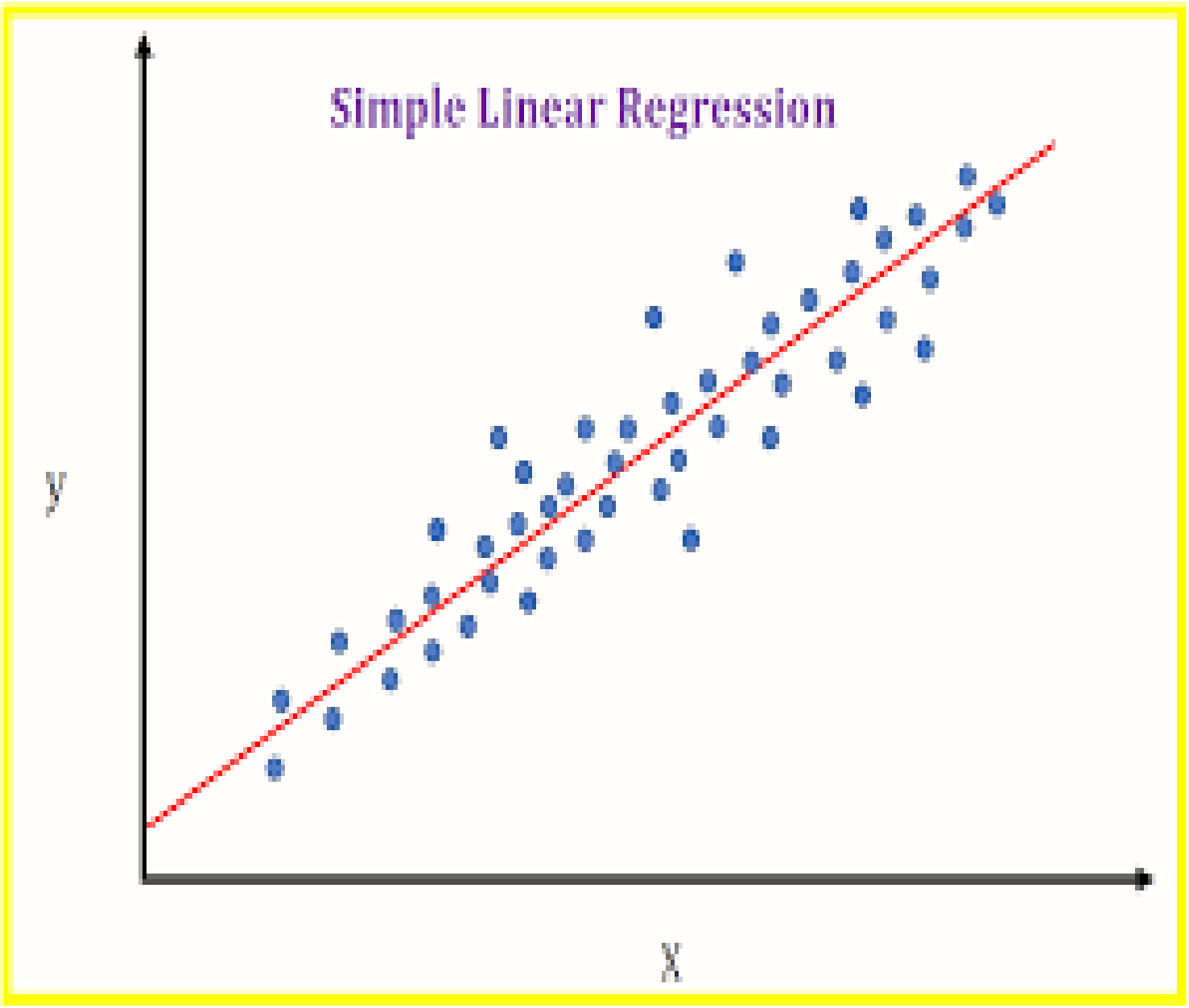
$$y = b_0 + b_1 x_1$$

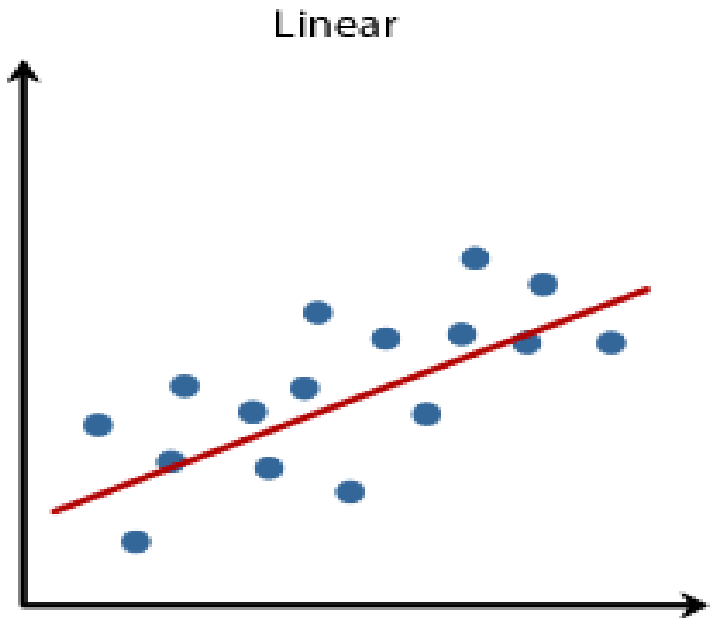
Multiple Linear Regression

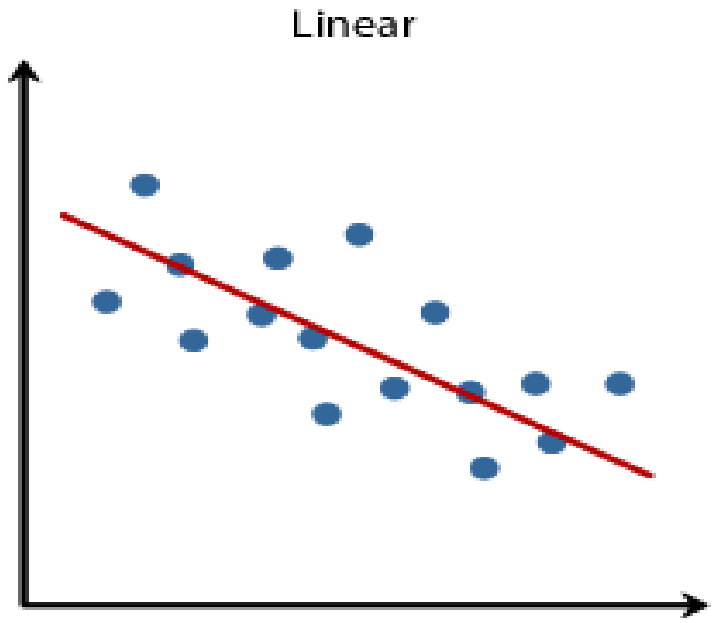
$$y = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_n x_n$$

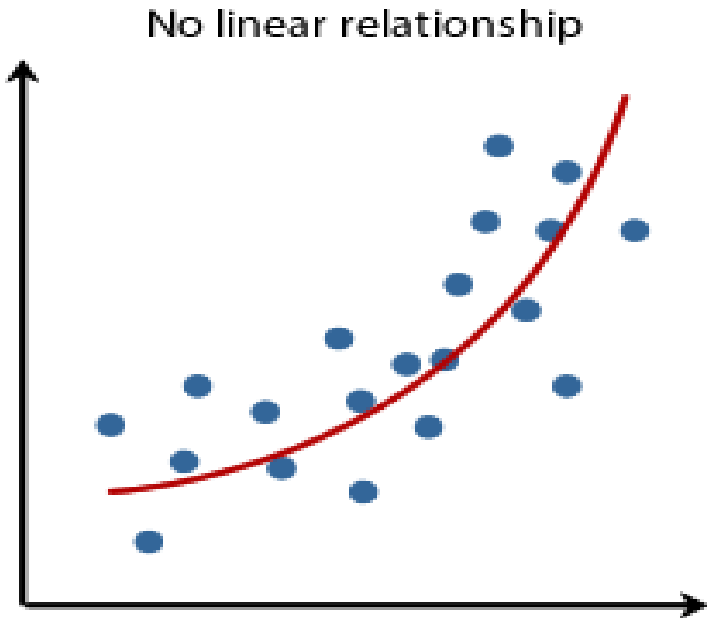
Polynomial Linear Regression

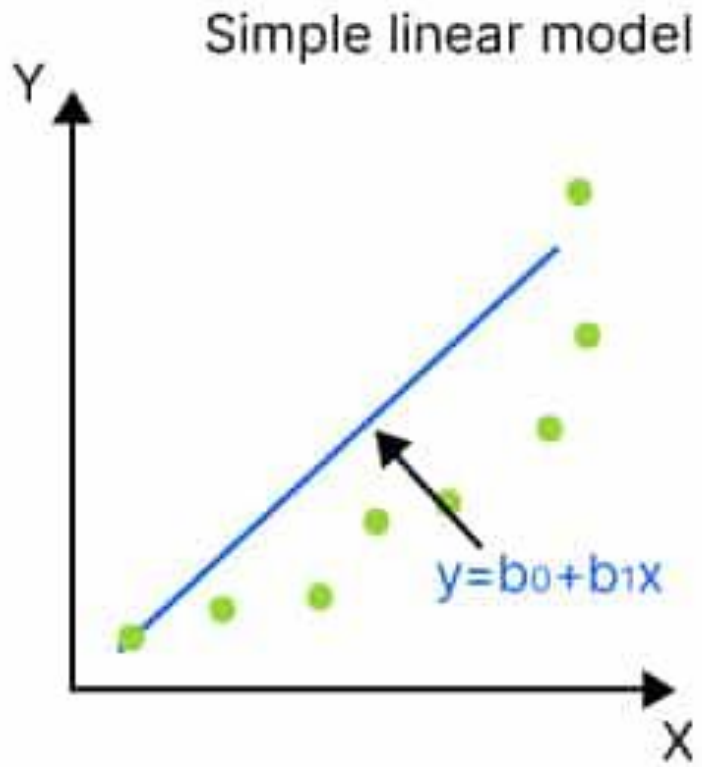
$$y = b_0 + b_1 x_1 + b_2 x_1^2 + \ldots + b_n x_1^n$$

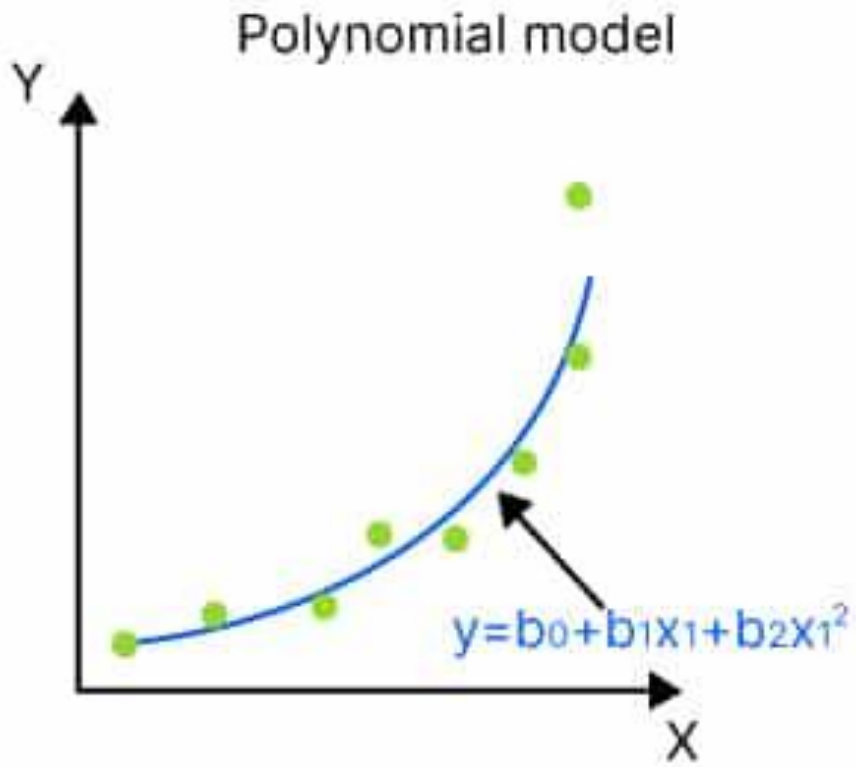

Simple Linear Regression
y
x

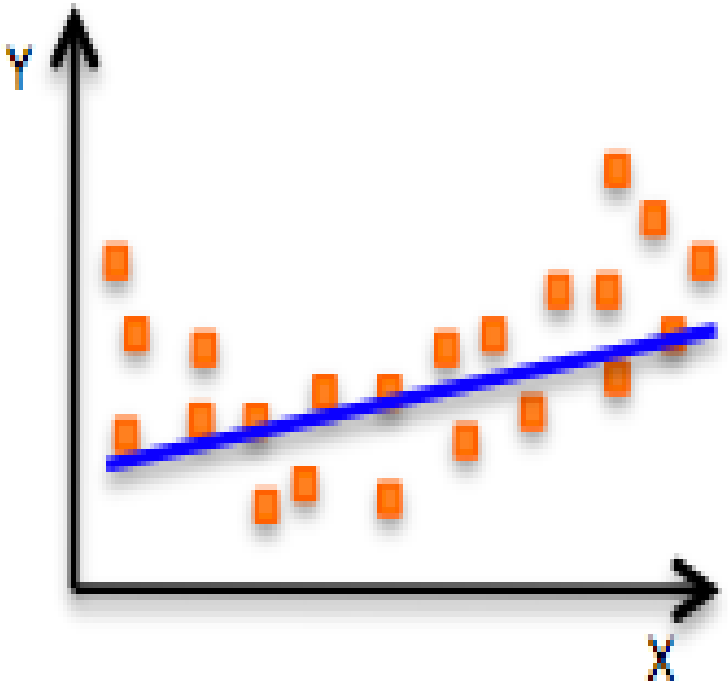




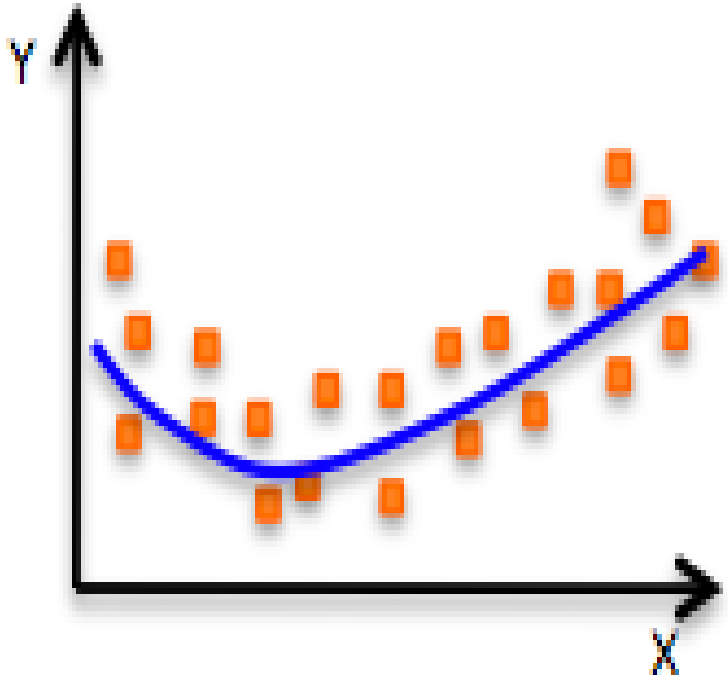



Simple linear model
Y
X
y=b0+b1x

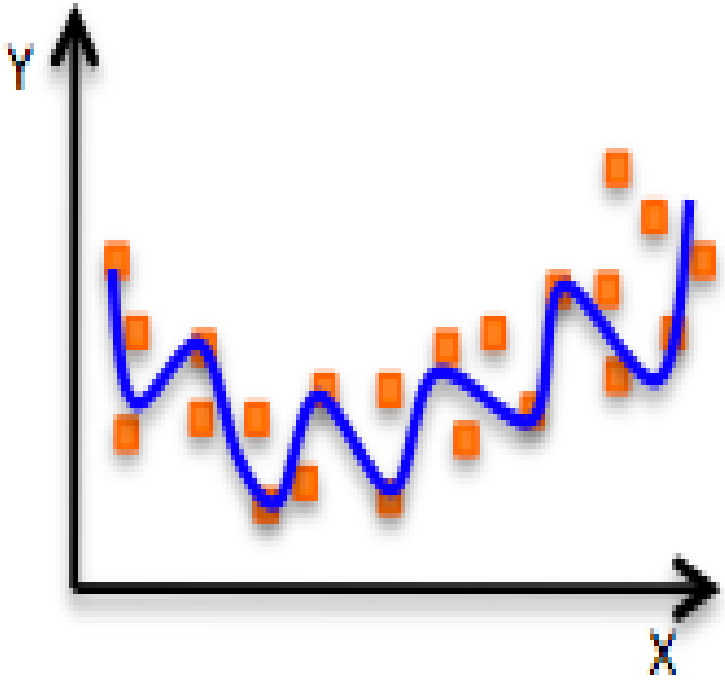

Polynomial model
Y
X
y=b0+b1x1+b2x1^2



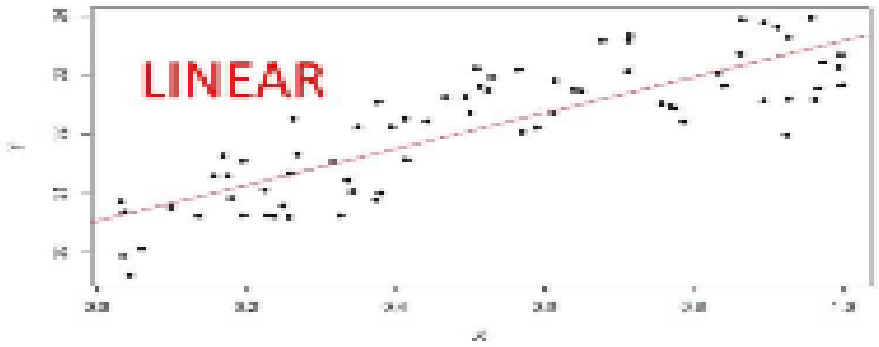
Underfitting



Just right!

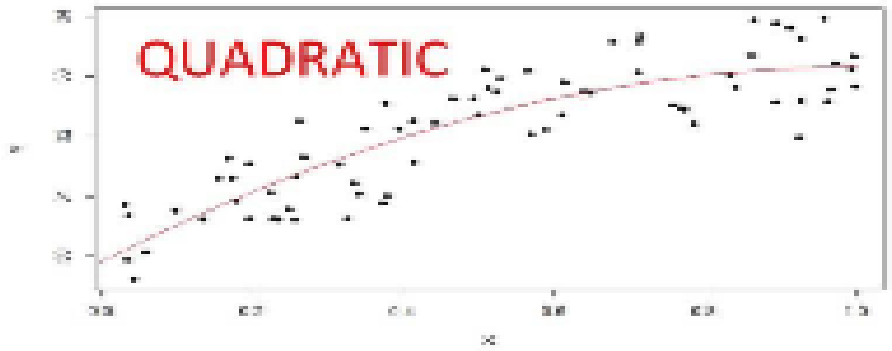


overfitting



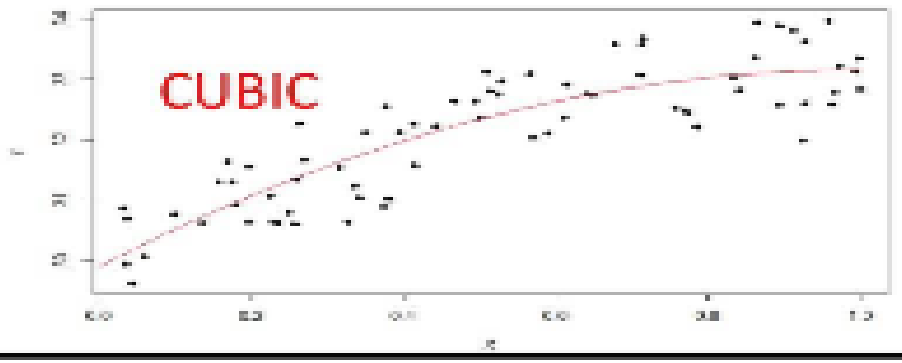
Multiple R-squared: 0.7044

$Y = 30.53 + 3.05*X$



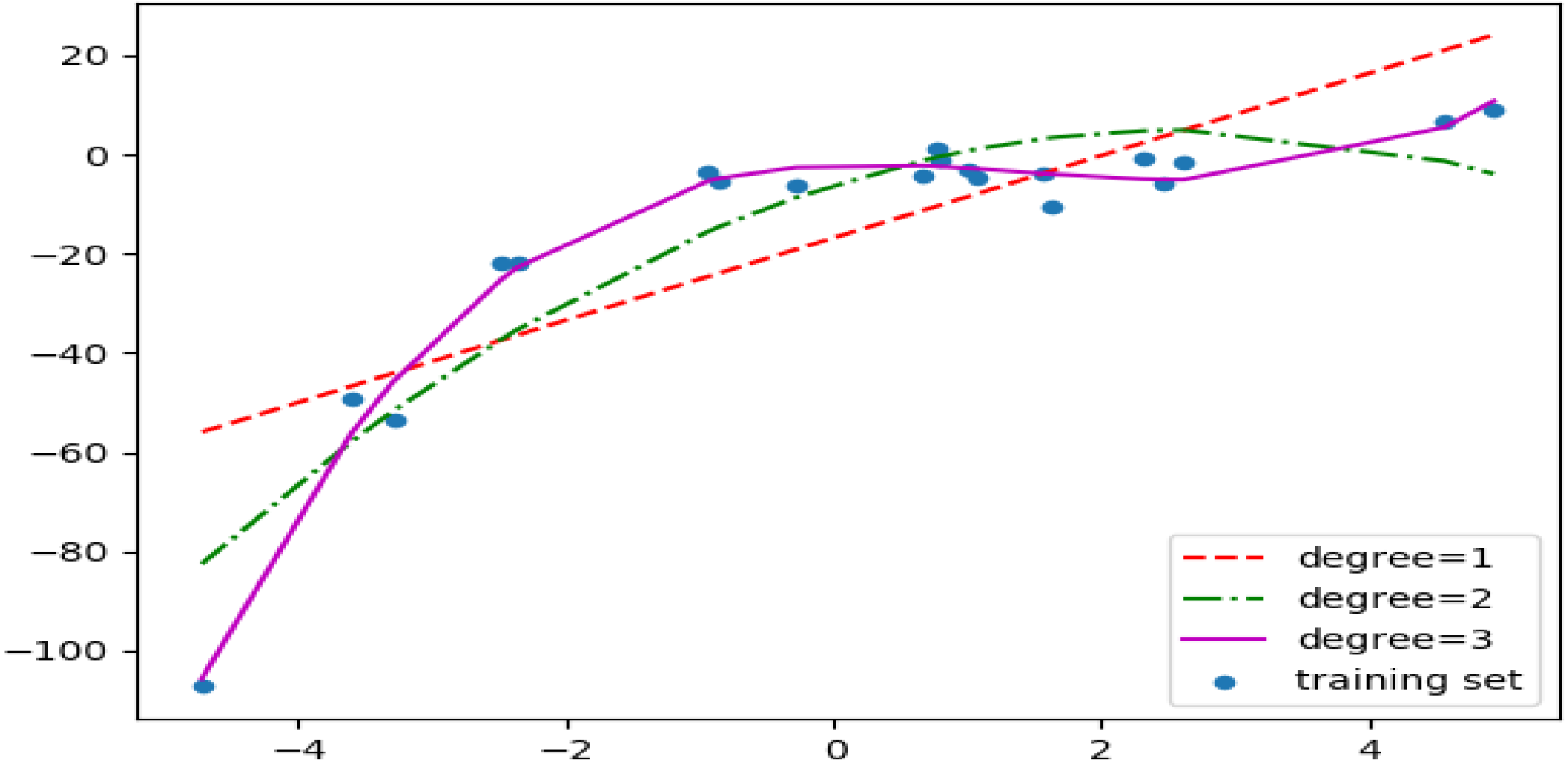
Multiple R-squared: 0.7559

$Y = 29.90 + 6.48*X - 3.22*X^2$



Multiple R-squared: 0.7623

$Y = 30.17 + 3.61*X + 3.71*X^2 - 4.48*X^3$


20
0
−20
−40
−60
−80
−100
−4
−2
0
2
4
degree=1
degree=2
degree=3
training set