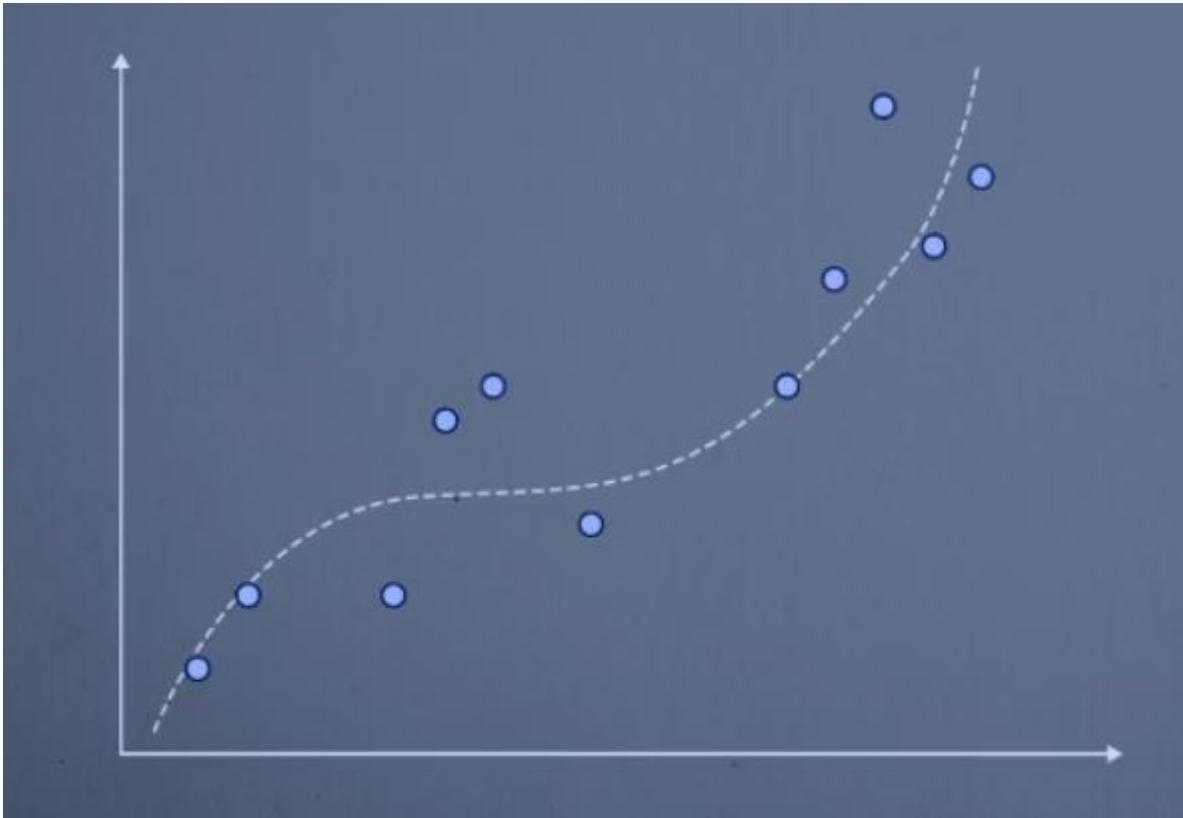


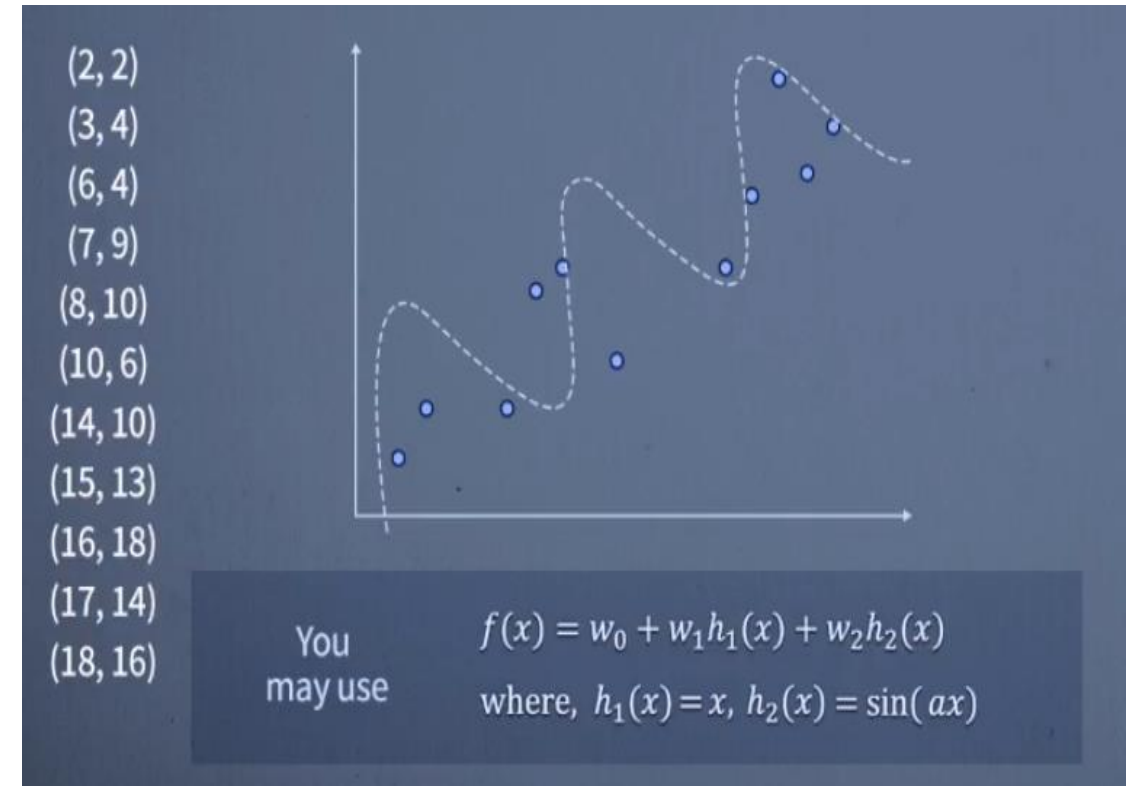
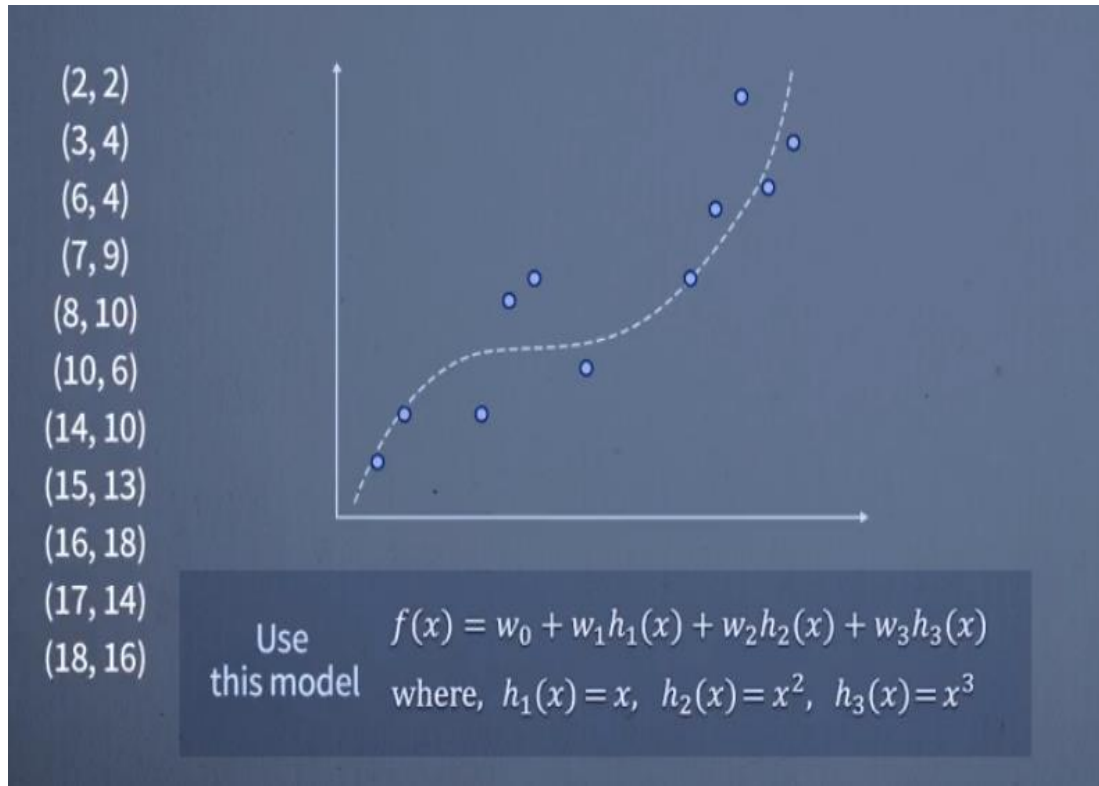
Linear Additive Model

Linear Additive Model

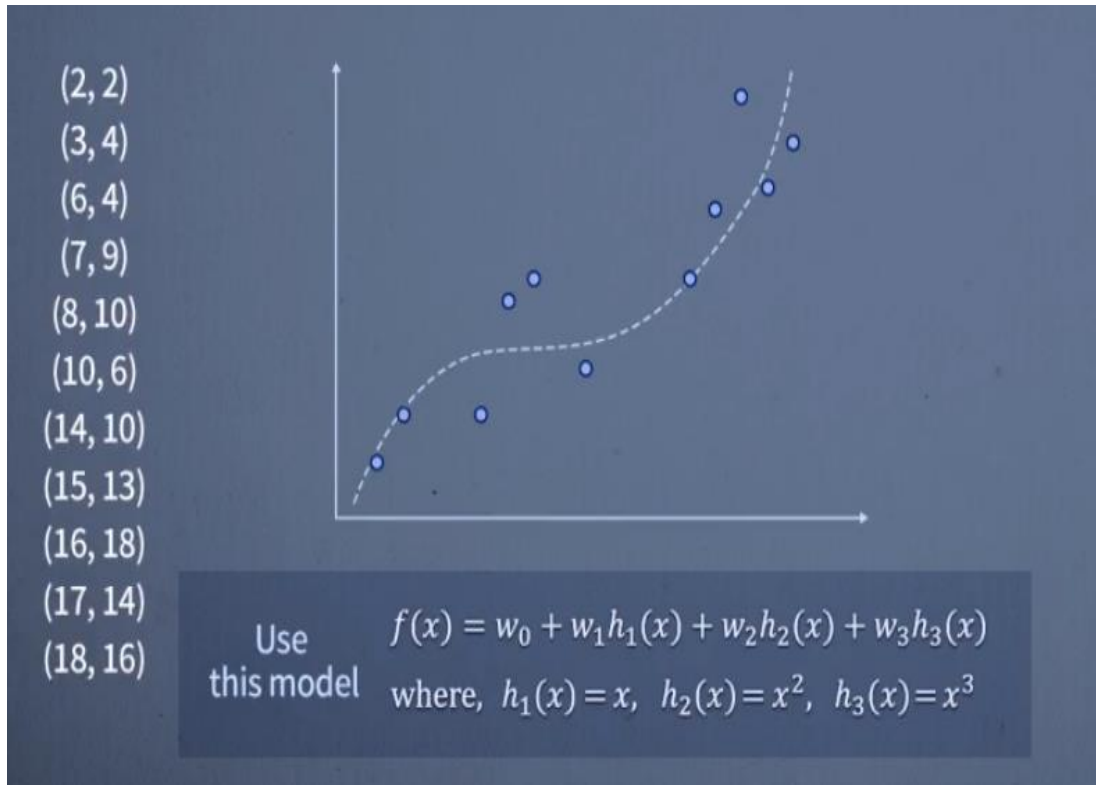


직선이 아닌 3차 곡선, 혹은 다른 도형으로 fitting하기

어떤 모델(함수)를 사용할 것인가?



How to Solve?



(2, 2)
 (3, 4)
 (6, 4)
 (7, 9)
 (8, 10)
 (10, 6)
 (14, 10)
 (15, 13)
 (16, 18)
 (17, 14)
 (18, 16)

$h_1(x) = x$, $h_2(x) = x^2$, $h_3(x) = x^3$

$$\mathbf{H} = \begin{pmatrix} h_0(\mathbf{x}_1), h_1(\mathbf{x}_1), h_2(\mathbf{x}_1), h_3(\mathbf{x}_1) \\ h_0(\mathbf{x}_2), h_1(\mathbf{x}_2), h_2(\mathbf{x}_2), h_3(\mathbf{x}_2) \\ h_0(\mathbf{x}_3), h_1(\mathbf{x}_3), h_2(\mathbf{x}_3), h_3(\mathbf{x}_3) \\ \dots \\ h_0(\mathbf{x}_n), h_1(\mathbf{x}_n), h_2(\mathbf{x}_n), h_3(\mathbf{x}_n) \end{pmatrix}$$

$$\mathbf{Y} = \begin{pmatrix} 2 \\ 4 \\ 4 \\ \dots \\ 16 \end{pmatrix}$$

$$\mathbf{w} = (\mathbf{H}^T \mathbf{H})^{-1} (\mathbf{H}^T \mathbf{Y})$$

$$\begin{aligned}
 f(x) = & -0.63143704 \\
 & + 1.713506327 * x \\
 & - 0.121906349 * x^2 \\
 & + 0.004481823 * x^3
 \end{aligned}$$

장점과 단점

- 장점
 - 가장 쉬운 방법
- 단점
 - 곡선 함수를 사용자가 직접 정의해야 한다.
 - H함수를 모르는 경우 예측하기 어렵다.