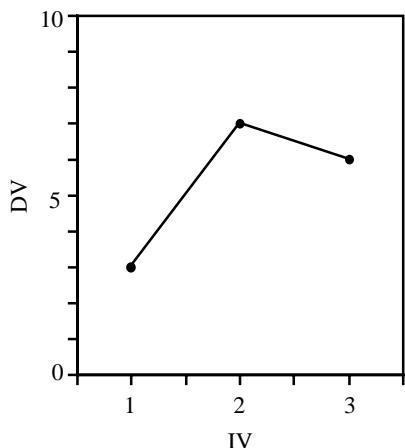


Example of fitting 3 points with polynomial of 2nd degree

$\bar{Y}_{Aj}$	DV	1	2	3
		3	7	6



$$DV = a + bx + cx^2$$

We have 3 eq. in 3 unknowns

$3 = a + b(1) + c(1)$	Eq 1
$7 = a + b(2) + c(4)$	Eq. 2
$6 = a + b(3) + c(9)$	Eq. 3

Subtract Eq. 1 from Eq. 3

$$\begin{aligned} 6 &= a + 3b + 9c \\ 3 &= 1 + b + c \end{aligned}$$


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$$\begin{aligned} 3 &= 2b + 8c \\ 2b &= 3 - 8c \\ b &= 3/2 - 4c \end{aligned}$$

Subtract 2 x Eq. 1 from Eq. 2

$$\begin{aligned} 7 &= a + 2b + 4c \\ 6 &= 2a + 2b + 2c \end{aligned}$$


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$$\begin{aligned} 1 &= -a + 0 + 2c \\ a &= 2c - 1 \end{aligned}$$

Subst. into Eq. 1: solve for c

$$\begin{aligned} 3 &= (2c - 1) + (3/2 - 4c) + c \\ 3 &= 2c - 1 + 1.5 - 4c + c = 1/2 - c \\ 3 &= 1/2 - c \quad c = 1/2 - 3 \quad c = -2.5 \end{aligned}$$

Solve for b:

$$b = 3/2 - 4(-5/2) = 3/2 + 10 = 11.5$$

Solve for a:

$$\begin{aligned} a &= 2(-5/2) - 1 \\ a &= -6 \end{aligned}$$

$$\text{So: } DV = -6 + 11.5X + (-2.5)X^2$$

Then check calculations:

$$\begin{aligned} \text{Let } X &= 1 \\ DV &= -6 + 11.5 - 2.5 = 3 \end{aligned}$$

$$\begin{aligned} \text{Let } X &= 2 \\ DV &= -6 + 11.5(2) - (2.5)(4) \\ &= -6 + 23 - 10 = 7 \end{aligned}$$

$$\begin{aligned} \text{Let } X &= 3 \\ DV &= -6 + 11.5(3) - (2.5)(9) \\ &= -6 + 34.5 - 22.5 = 6 \end{aligned}$$