Curve Fitting with a Linear Equation

Sx = sum (i = 1 : n) ⇒ xi

Sy = sum (i = 1 : n) ⇒ yi

Sxy = sum (i = 1 : n) ⇒ xiyi

Sxx = sum (i = 1 : n) ⇒ (xi)2

**6.1**:

Sx = 1 + 3 + 4 + 6 + 9 + 12 + 14 = 49

Sy = 2 + 4 + 5 + 6 + 7 + 9 + 11 = 44

Sxy = 1(2) + 3(4) + 4(5) + 6(6) + 9(7) + 12(9) + 14(11) = 395

Sxx = 12 + 32 + 42 + 62 + 92 + 122 + 142 = 483

a1 = (n\*Sxy - Sx\*Sy) / (n\*Sxx - (Sx)2) = (7\*395 - 49\*44) / (7\*483 - 492) = 0.6214

a0 = (Sxx\*Sy - Sxy\*Sx) / (n\*Sxx - (Sx)2) = (483\*44 - 395\*49) / (7\*483 - 492) = 1.9357

**6.3**:

Y = mx + ln(b) where Y = ln(y)

Sx = 1900 + 1950 + … = 13800

Sy = ln(400) + ln(557) + … = 47.3186

Sxy = 1900(ln(400)) + 1950(ln(557)) + … = 93384

Sxx = 19002 + 19502 + … = 27214000

a1 = 0.012

a0 = -16.8796

ln(y) = mx + ln(b)

y = bemx

m = a1

a0 = ln(b)

b = ea0

⇒ y = ea0ea1(x) = 4.7x10-8e0.012x