数据列表

x	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
y	0	21	40	58	79	98	123	139	158	178	196	215	235
xy	0	2.1	8	17.4	31.6	49	73.8	97.3	126.4	160.2	196	236.5	282
x^2	0	0.01	0.04	0.09	0.16	0.25	0.36	0.49	0.64	0.81	1	1.21	1.44
y^2	0	441	1600	3364	6241	9604	15129	19321	24964	31684	38416	46225	55225

平均数计算

$\bar{x} = 0.6, \bar{y} = 118.46154$

$\overline{x}^2 = 0.36000, \overline{y}^2 = 14033.13609$

$\overline{x^2} = 0.50000, \overline{y^2} = 19401.07692$

回归系数

$$b = \frac{\bar{x}\bar{y} - \overline{xy}}{\overline{x}^2 - \overline{x^2}} = 195.7692307692308,$$
$$a = \bar{y} - b\bar{x} = 0.999999999999986.$$

相关系数

$$r = \frac{\overline{xy} - \bar{x}\bar{y}}{\sqrt{\left(\overline{x^2} - \bar{x}^2\right)\left(\overline{y^2} - \bar{y}^2\right)}} = 0.999780340.$$

表达式

$$y = a + bx = 1.000000000 + 195.769230769x$$

不确定度

$$u(b) = b\sqrt{\frac{1}{k-2}\left(\frac{1}{r^2-1}\right)} = 1.23740096,$$
$$u(a) = \sqrt{\overline{x^2}} \cdot u(b) = 0.87497461.$$