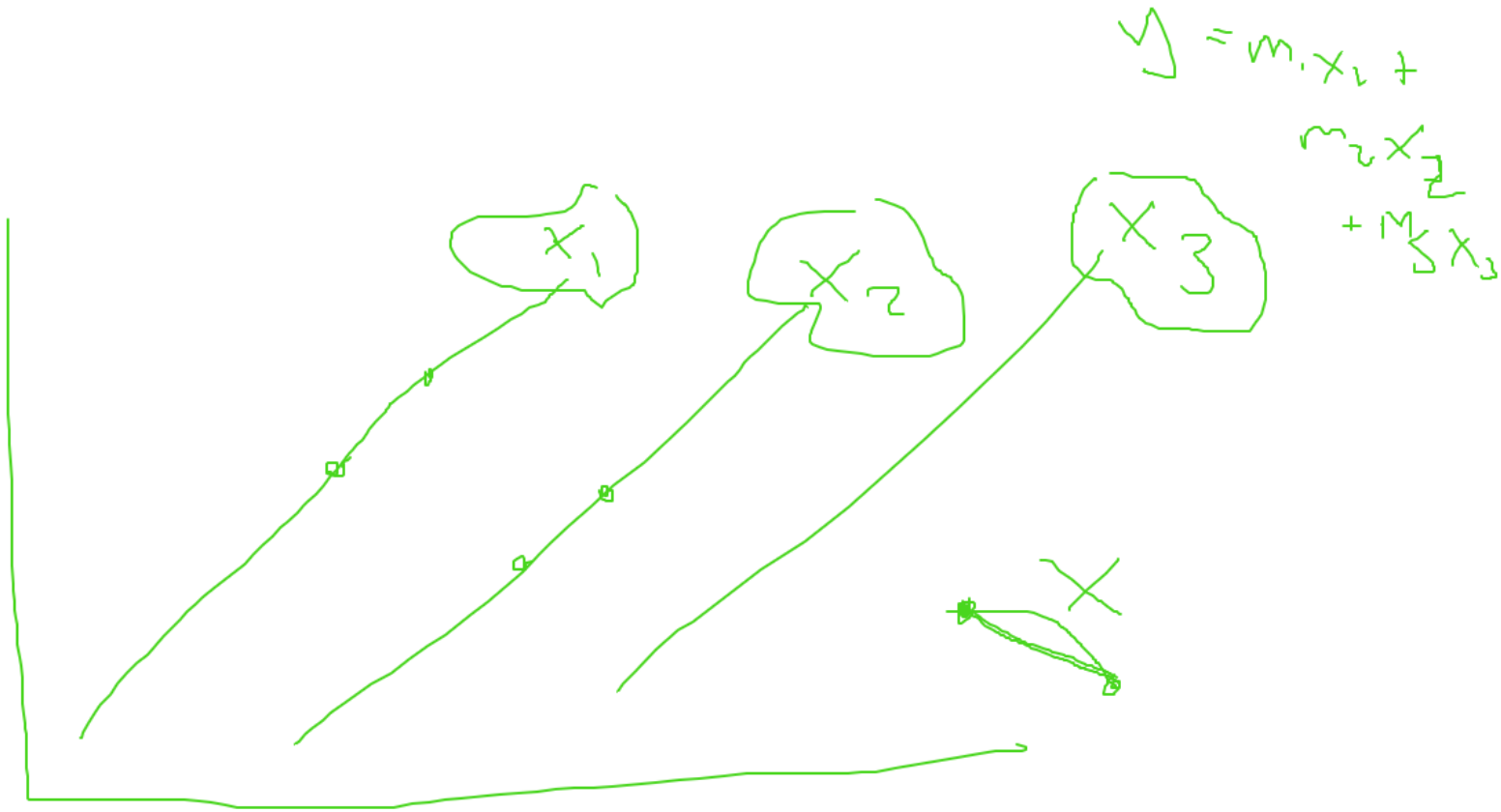
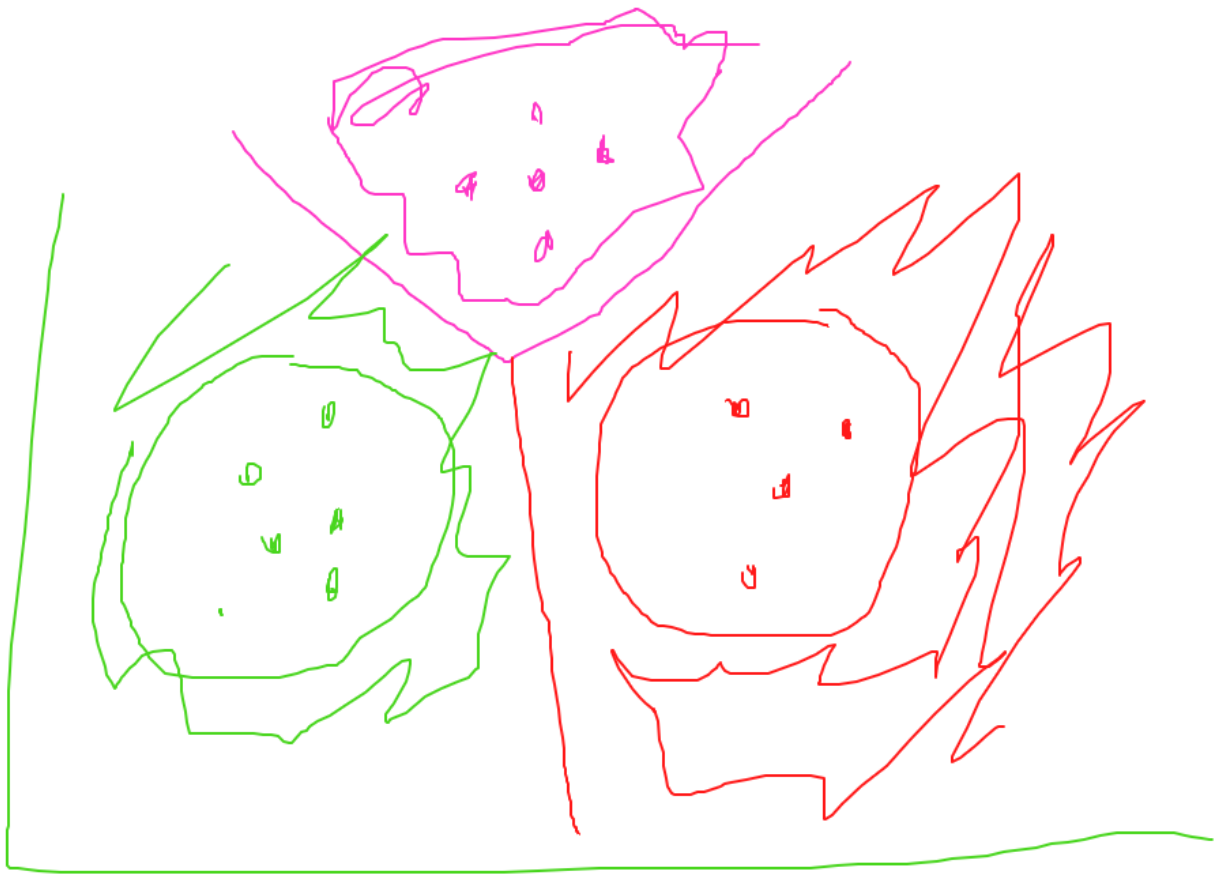
$$\|\vec{x}\|_2 = \sqrt{x_1^2 + x_2^2 + \cdots + x_n^2} = \sqrt{\sum_{i=1}^{n} x_i^2}$$

$$\|\vec{x}\|_1 = \sum_{i=1}^{n} |x_i| = |x_1| + |x_2|$$

L_1


y = m1x1 +
m2x2
+ m3x3
x1
x2
x3
x

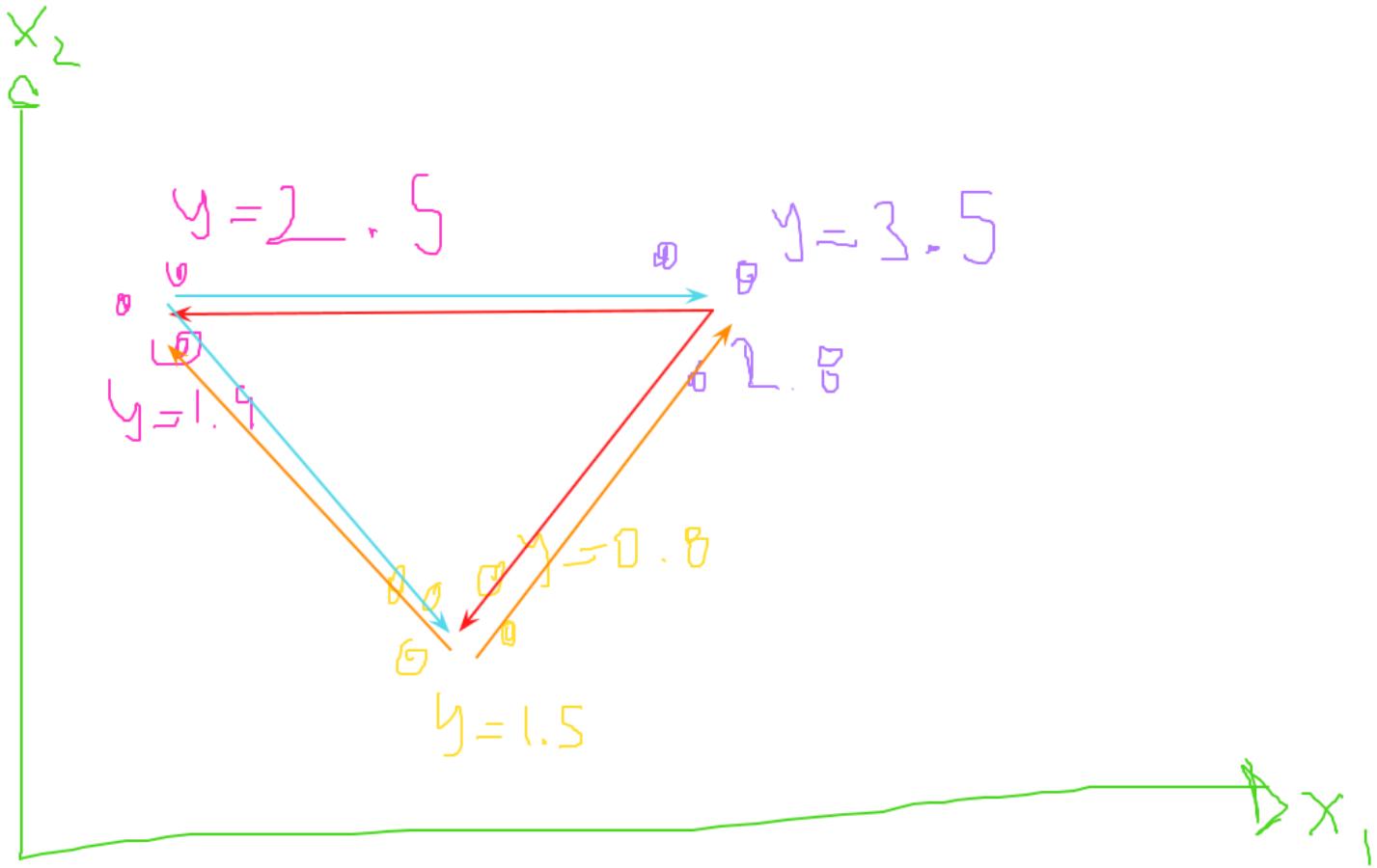


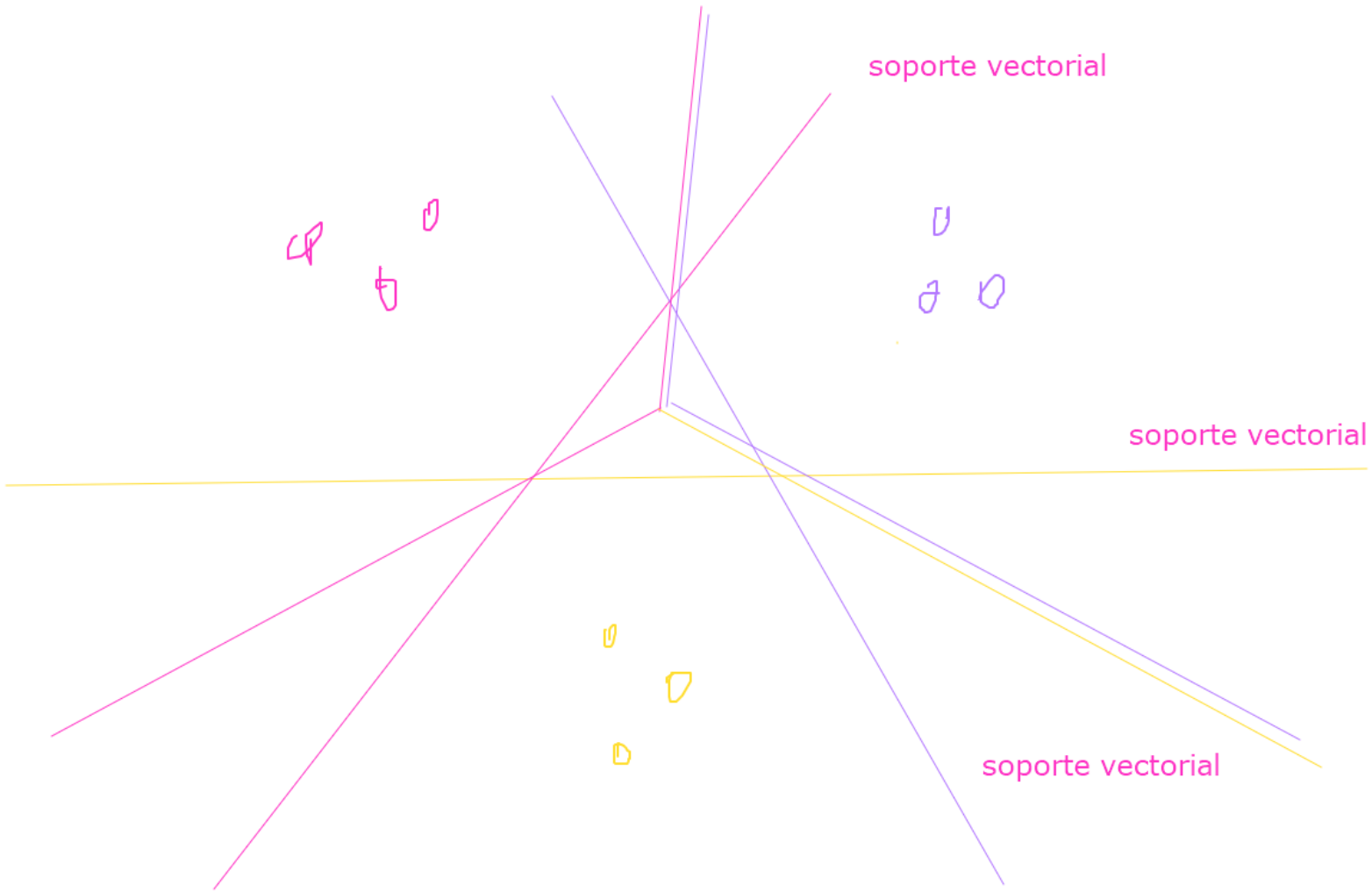
x1(salario) x2(edad) x3(estudio) y(estabilidad) yc(estabilidad_cat)

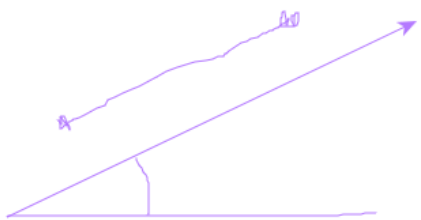
20,000 34 5 0.6
15,000 25 4 0.2
...

0.0-0.1 1
0.1-0.2 2
...
0.9-1.0 10

0-1 1
1-4 2
5-10 3
11-16 4
17-23 5

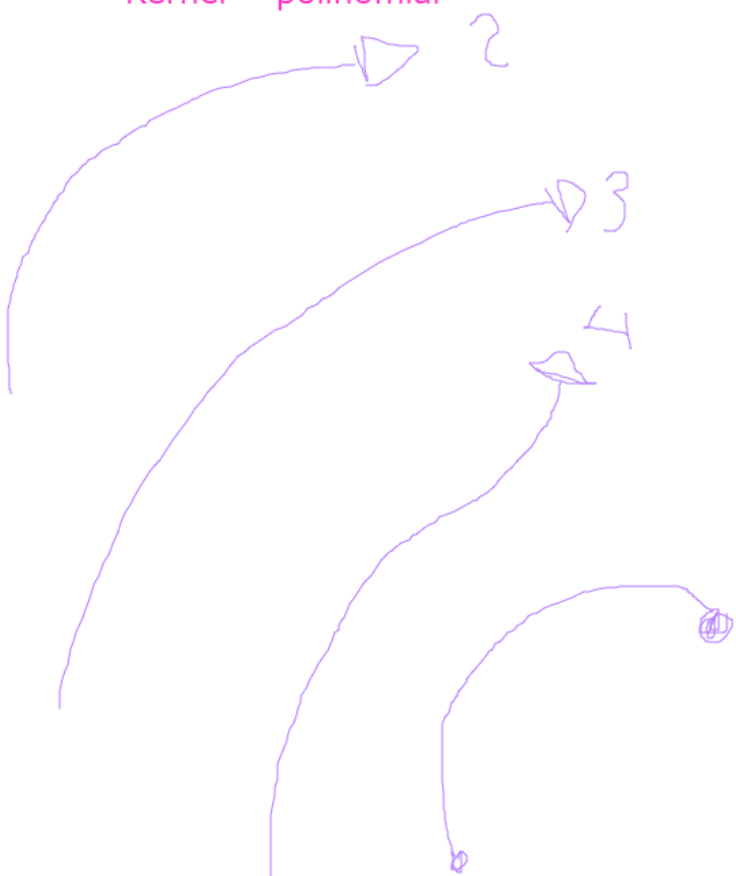

x_2
y = 2.5
y = 3.5
y = 1.4
2.8
y = 0.8
y = 1.5
x_1

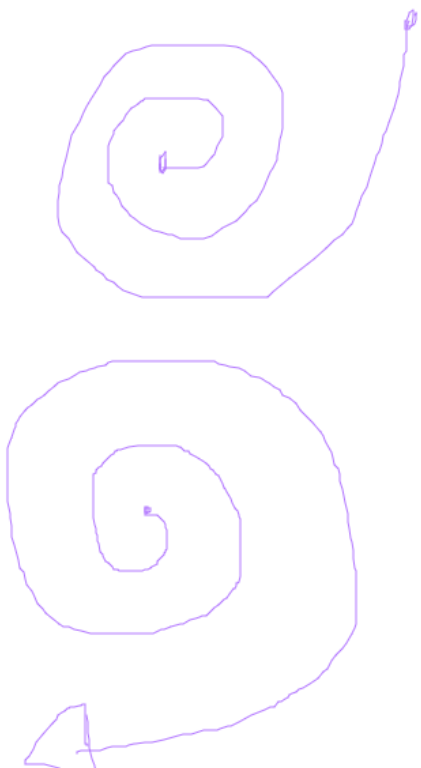

soporte vectorial
soporte vectorial
soporte vectorial



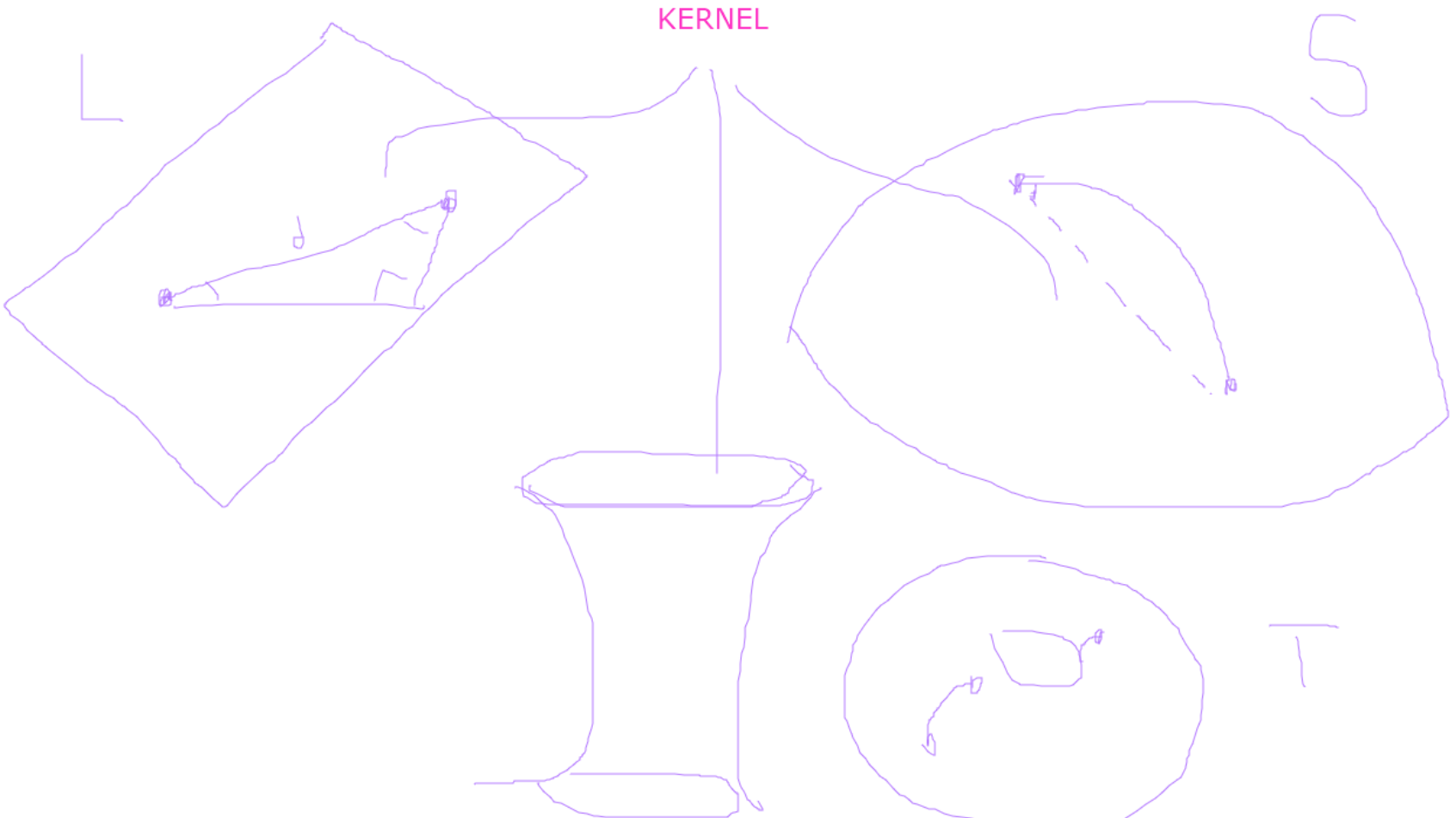
Kernel = lineal

Kernel = polinomial





Kernel = radial


KERNEL

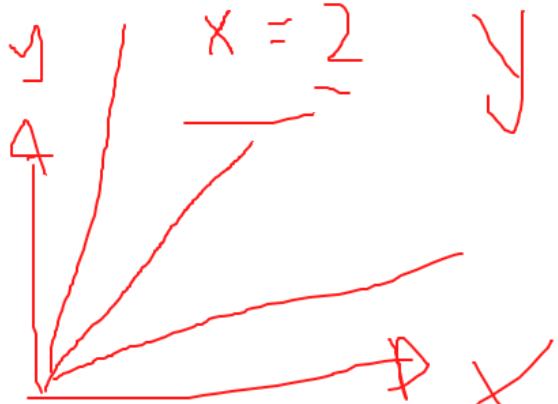
$$COV(X,Y) = \frac{1}{n-1}\sum x_i y_i - n\bar{x}\bar{y}$$

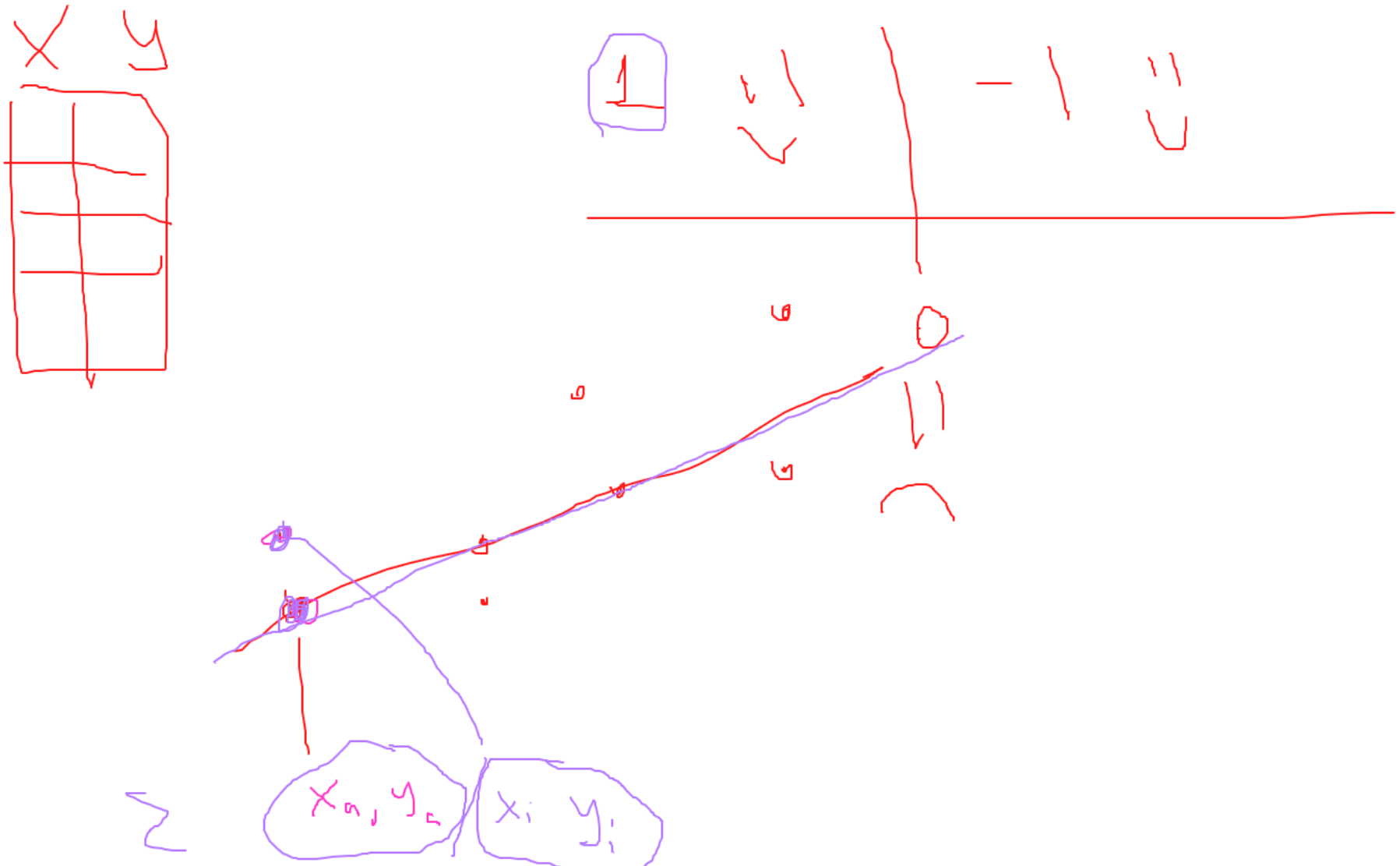
$$\frac{1}{n-1}\sum x_i x_i - n\bar{x}\bar{x}$$

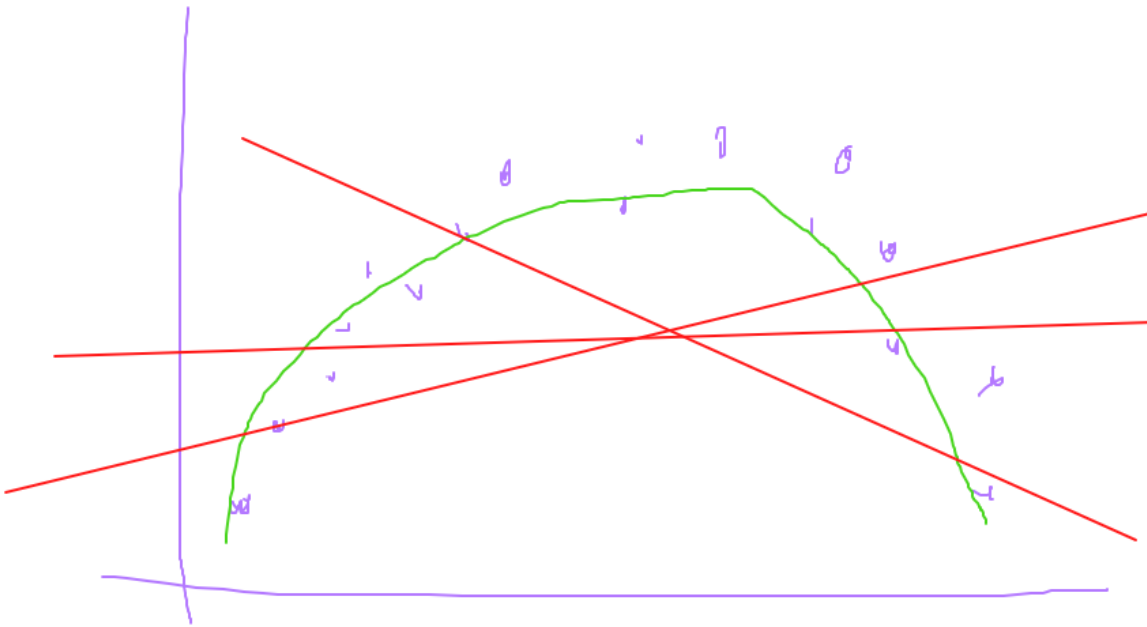
x	y
1	1.1
2	1.8
3	2.9

1
2
3

$\bar{x} = 2$ $\bar{y} = 2.1$



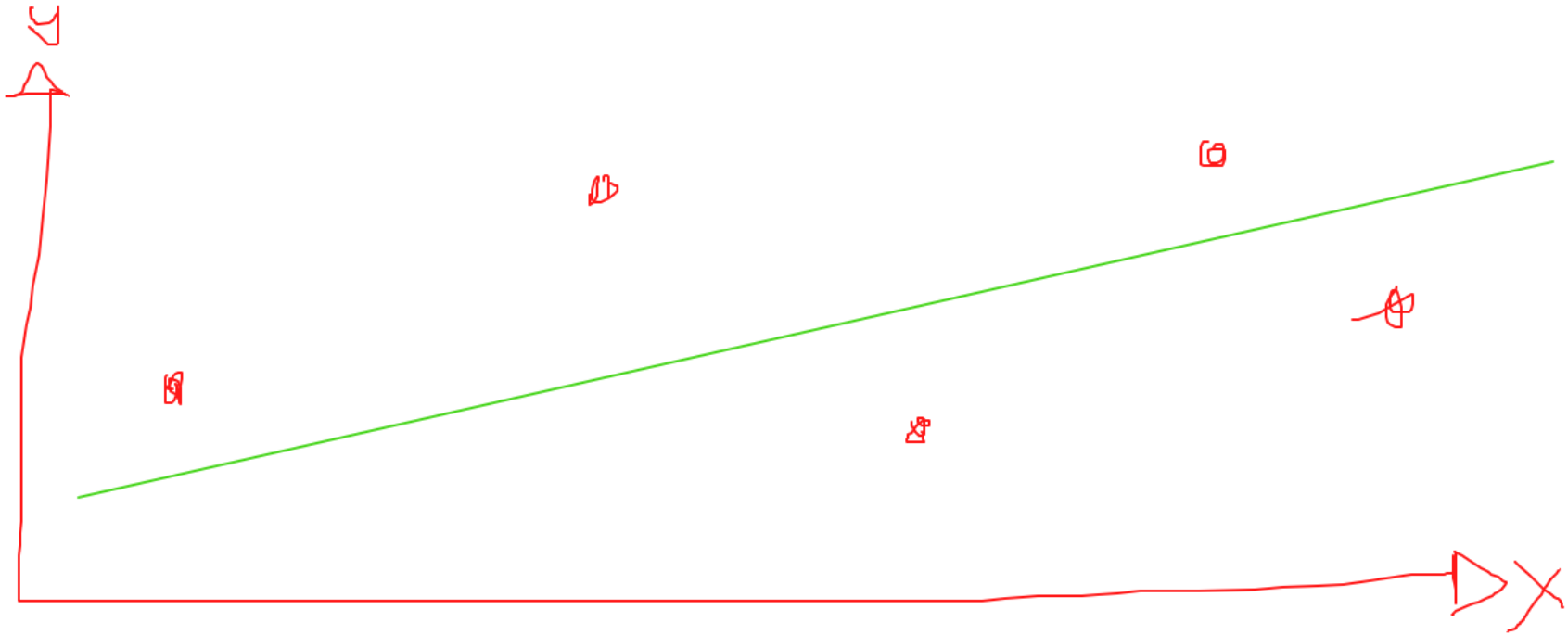

x y
x_n, y_n
x_i y_i



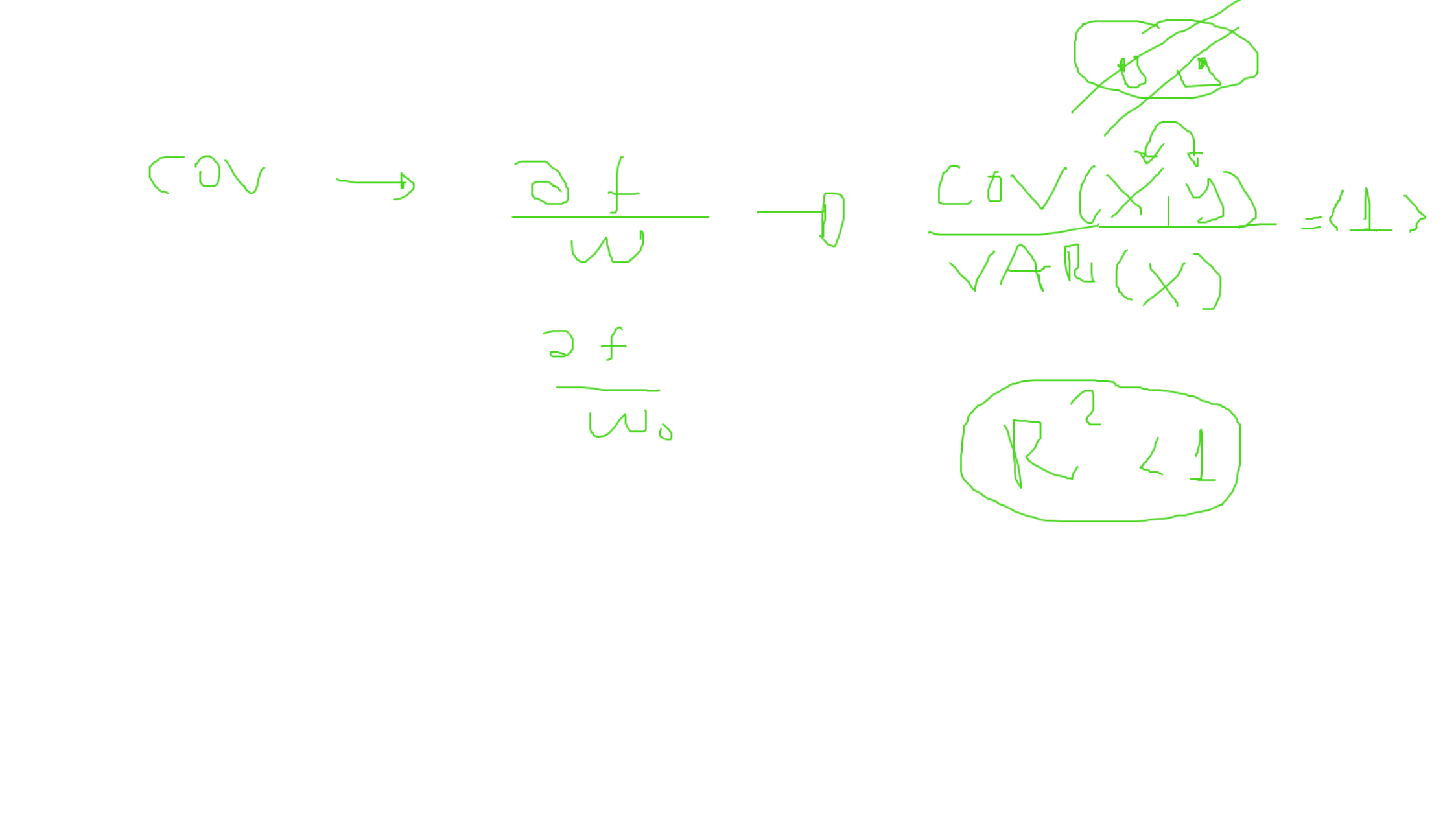
R^2 = 1 > 0.8

R^2 = 0 <= 0.8

```
[i ** 2 for i in range(10)]
```



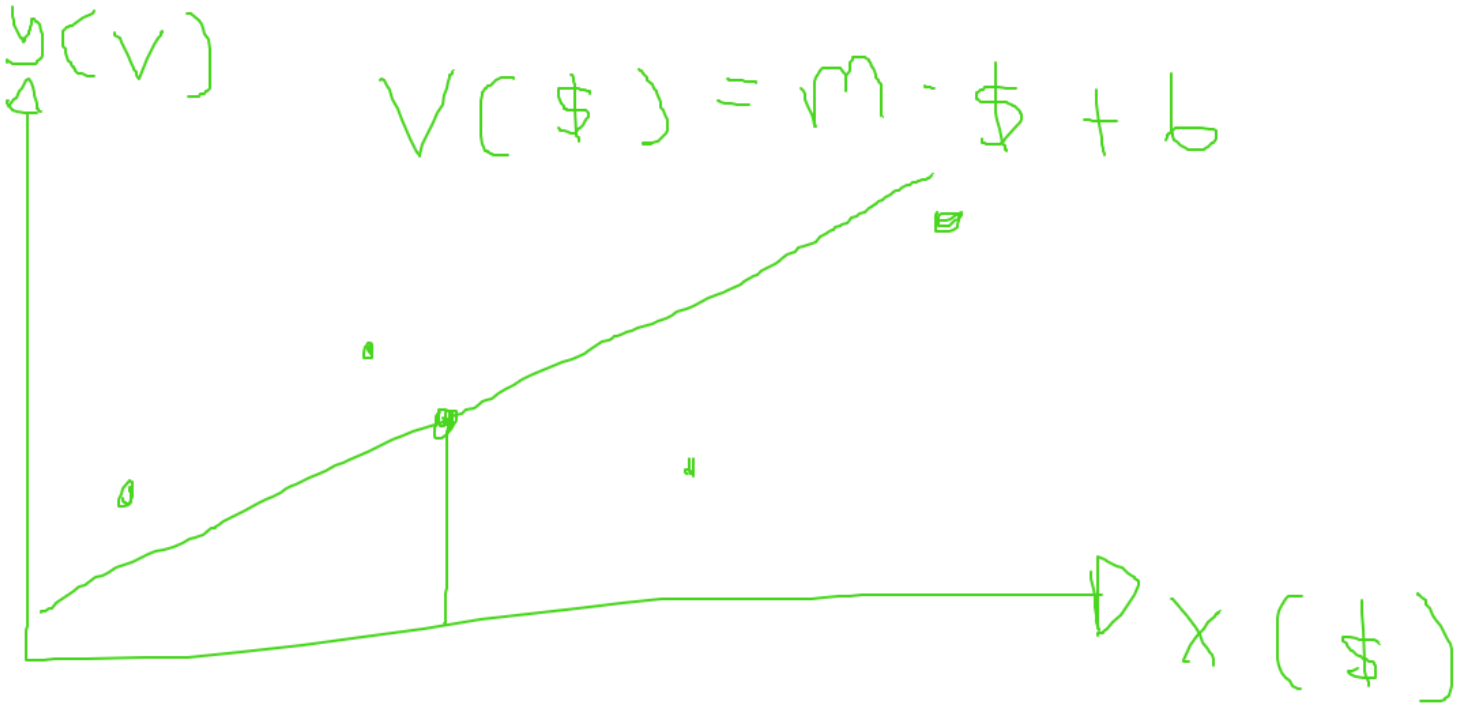
$$y = m\,x + b$$



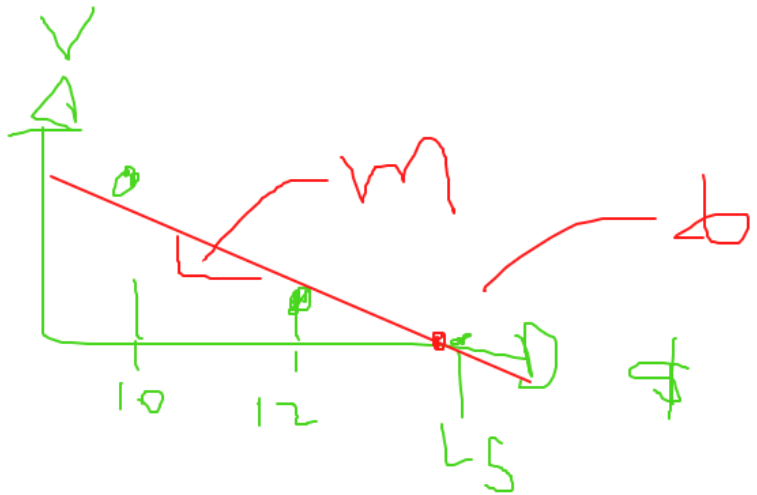
$$\text{cov} \longrightarrow \frac{\partial f}{w} \longrightarrow \frac{\text{cov}(X, Y)}{\text{VAR}(X)} = \langle 1 \rangle$$

$$\frac{\partial f}{w_0}$$

$$R^2 < 1$$

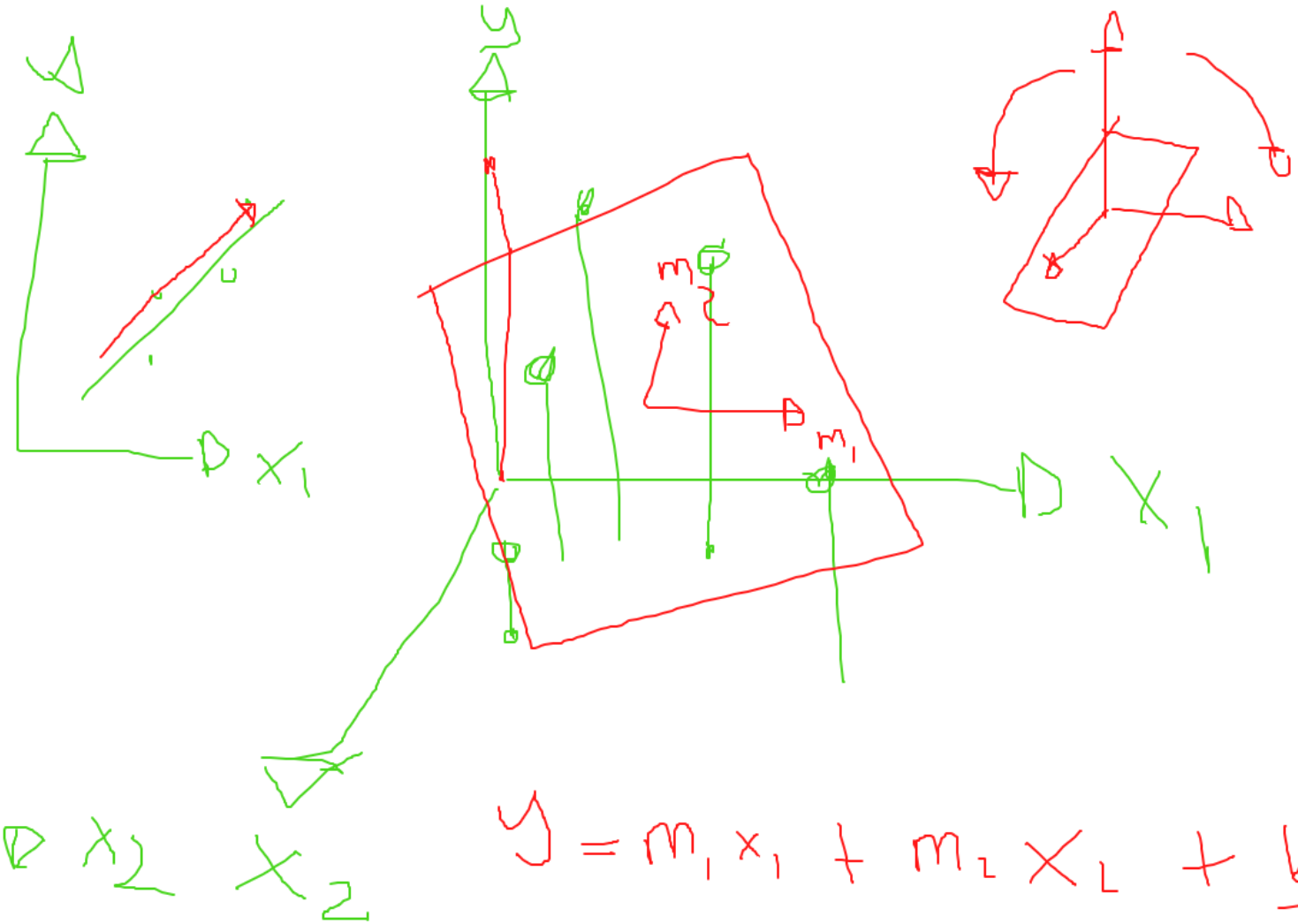

y (V)
V($) = m · $ + b
x ($)

$	V
10	5.6
12	3.4
15	1.2



$y = mx + b$

$1	$2	V
10	5	5.6
12	7	4
...	...	...



$$y = m_1 x_1 + m_2 x_2 + b$$

$$y = \sum_{i}^{n} m_i \cdot x_i + b$$

$$y = \vec{m} \cdot \vec{x} + b$$

$\mathbb{R}^n$

$x^T A x$

$$\approx \quad y = Ax + b$$

$$\begin{cases} 2x + 5y = 8 \\ x - y = 4 \end{cases}$$

$$\begin{pmatrix} 2 & 5 \\ 1 & -1 \end{pmatrix}$$

$$X = \begin{pmatrix} (x_1, x_2) \\ \vdots \\ (10, 5) \end{pmatrix}^{2}$$

$$X = \begin{pmatrix} \overline{\overline{(x_1)}} \\ \vdots \\ (10) \end{pmatrix}$$