

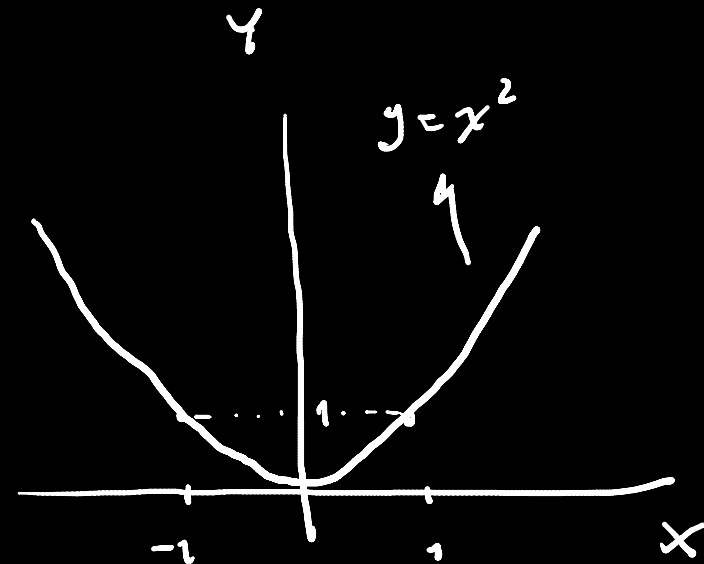
25/04/2025

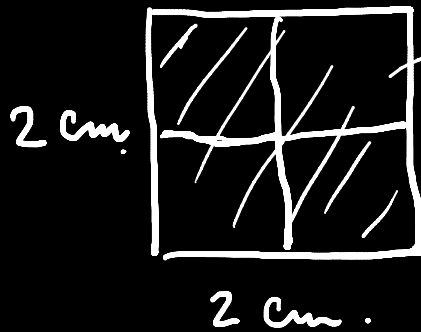
QFMT-14

La función cuadrática

$$y = x^2$$

x	$\longrightarrow$	y
2	$\longrightarrow$	4
3	$\longrightarrow$	9
-5	$\longrightarrow$	25
8	$\longrightarrow$	64
-10	$\longrightarrow$	100
0.1	$\longrightarrow$	0.01
-0.02	$\longrightarrow$	0.0004
0	$\longrightarrow$	0





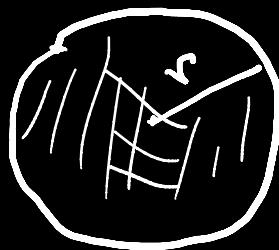
¿Área? ¿de un cuadrado?

$$A_{\text{ce}} = 4 \text{ cm}^2$$

¿Qué significa

$$A(x) = x \cdot x$$

$$A(3) = 9 \text{ cm}^2$$



¿Área de una circunferencia?

$$\hookrightarrow \pi r^2 ;$$

$$\pi \approx 3.14$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$\swarrow$ $\searrow$
 3 2

$$(a+b)(a+b) = a^2 + ab + ba + b^2 = a^2 + 2ab + b^2$$

Otra demostración.

$$\begin{array}{l}
 a \left\{ \begin{array}{l} \text{I} \\ \text{II} \end{array} \right. \\
 b \left\{ \begin{array}{l} \text{I} \\ \text{II} \end{array} \right.
 \end{array}
 (a+b) \left\{ \begin{array}{l} b \\ a \end{array} \right.
 \begin{array}{|c|c|} \hline a \cdot b & b^2 \\ \hline a^2 & ab \\ \hline \end{array}$$

$\underbrace{\hspace{10em}}$
 $a+b$

Vamos a utilizar
esta relación del
Cuadrado del
binomio //

$$(a+b)^2 = a^2 + 2ab + b^2 \quad \checkmark$$

$$y = x^2$$

y

$$\text{Si } x=1$$

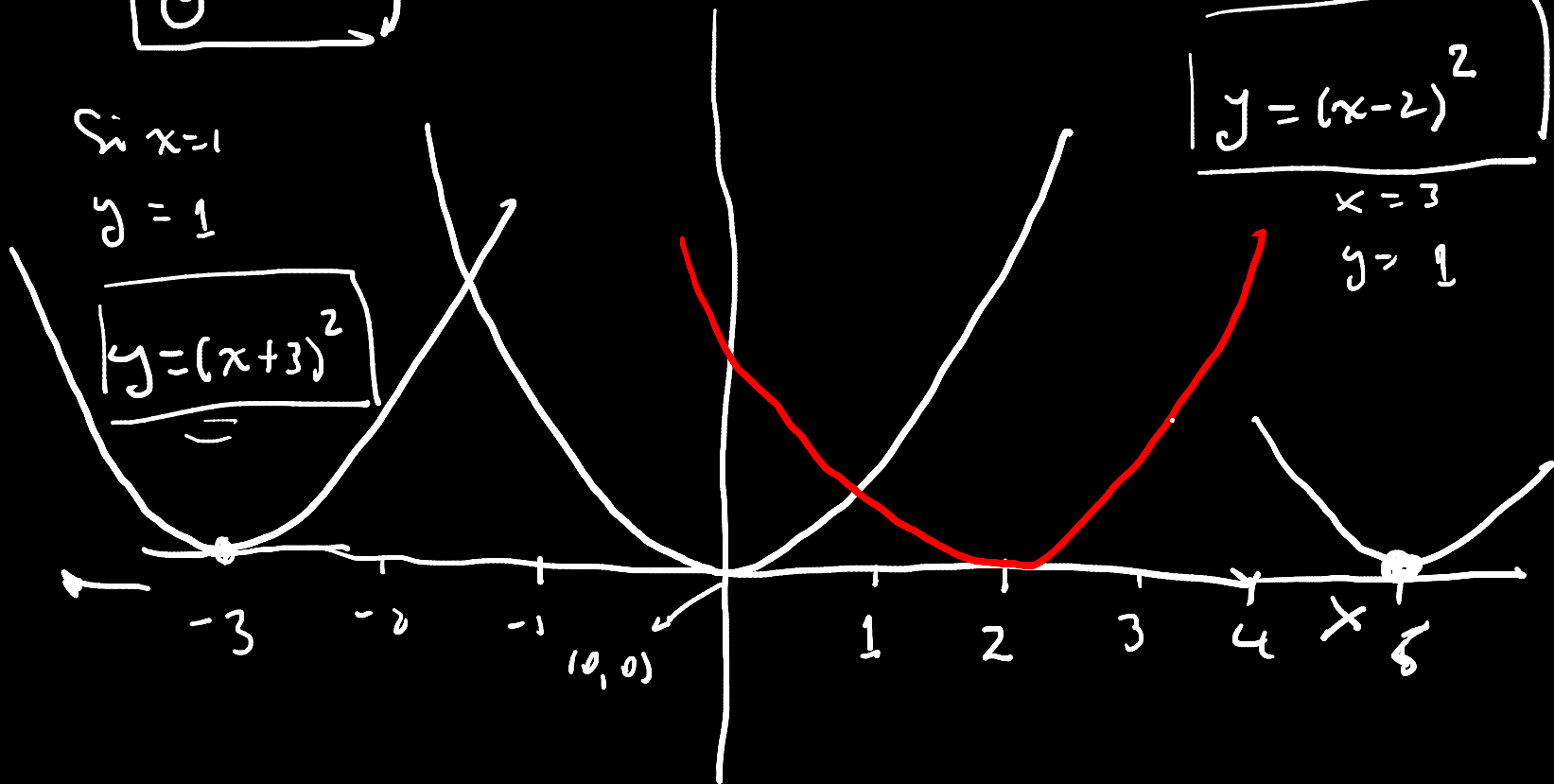
$$y=1$$

$$y = (x+3)^2$$

$$y = (x-2)^2$$

$$x=3$$

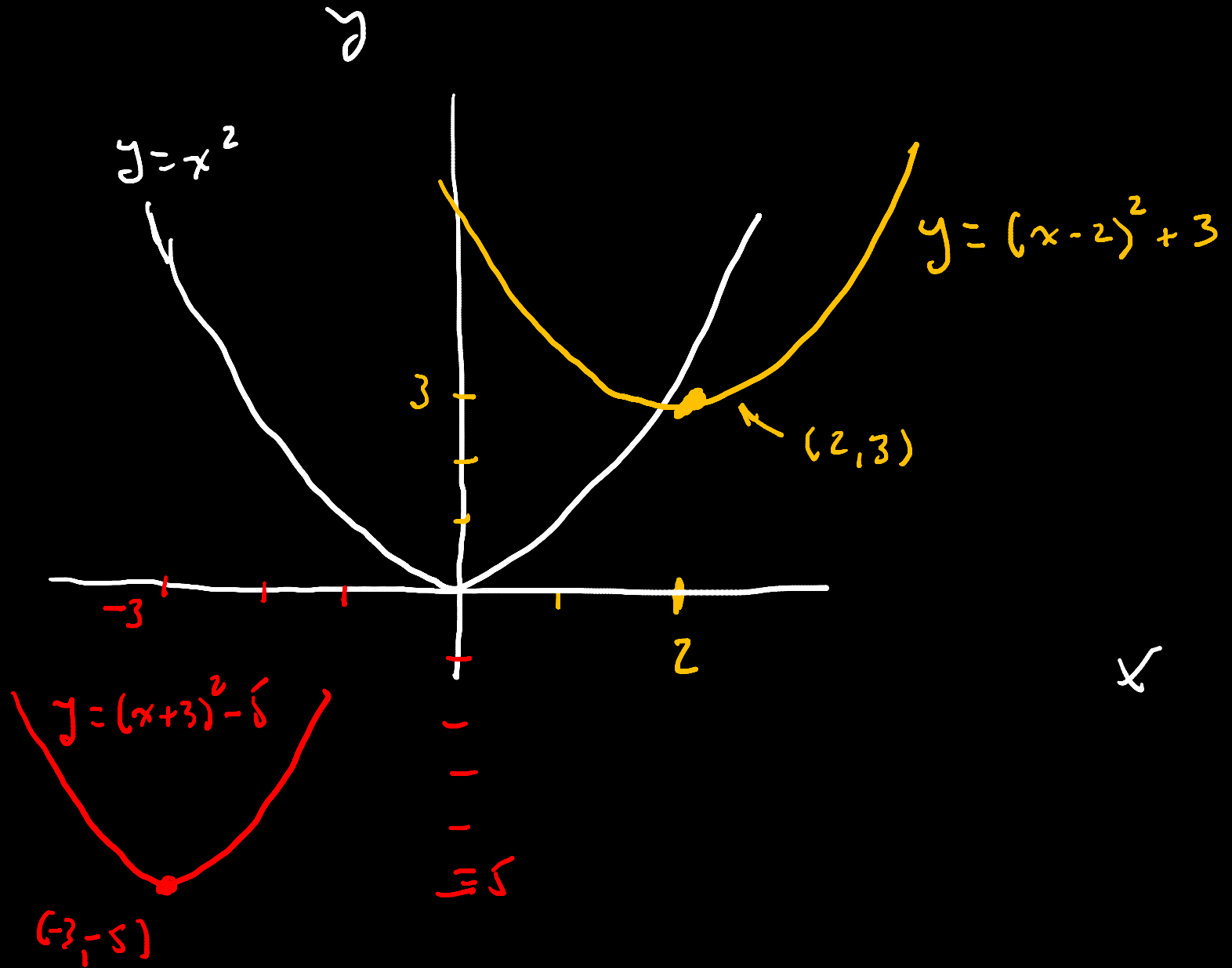
$$y=1$$

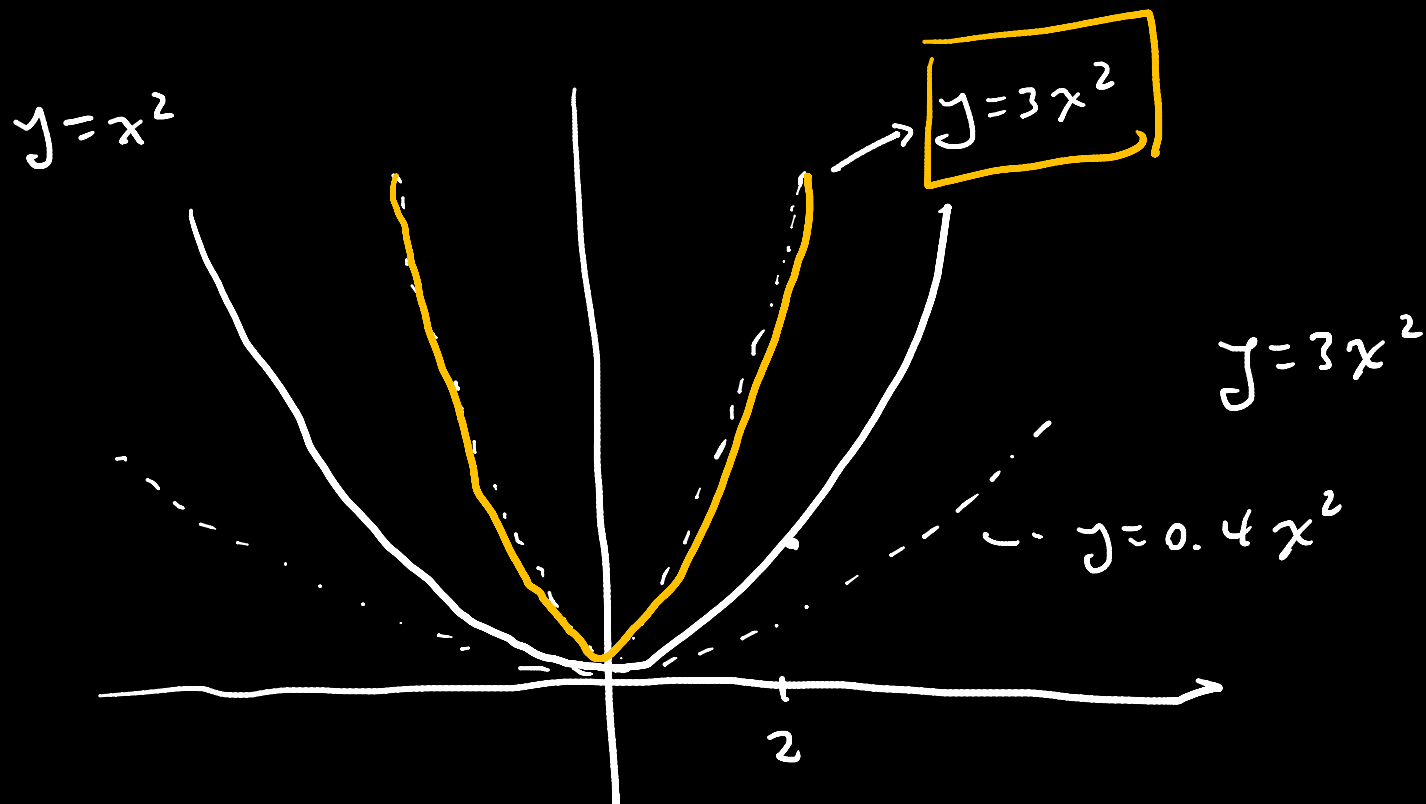


$$y = (x-5)^2$$

$$y = (x+6)^2$$

$$\text{Vertex} = (-6, 0)$$





¡Fantástico!

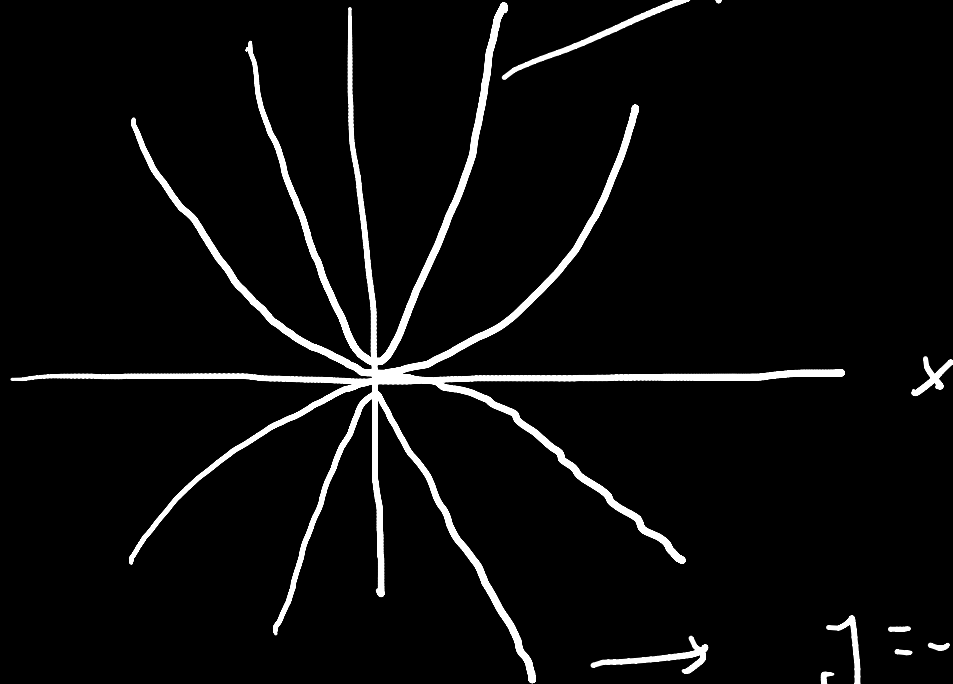
$V = (3, 2)$
¿Cuál es la ecuación?

$$y = 3(x-3)^2 + 2$$

$$y = x^2$$

2

$$y = 3x^2$$



$$y = -x^2$$

$$y = -3x^2$$

$$y = kx^2 \quad \text{for } k > 0 \quad \cup$$

$$\text{for } k < 0 \quad \cap$$

$$y = 5x^2 \quad \cup$$

$$y = -5x^2 \quad \cap$$

¿Se imaginan $y = -2(x-4)^2 + 6$?

¡Sí!

Sea $y = k(x-a)^2 + b$

forma "equedote"

Ejemplo $y = \cancel{x^2} - 2\cancel{x} + 1 + 4$

El profesor "melabito"

$$y = x^2 - 2x + 1 + 4$$

$$\boxed{y = x^2 - 2x + 5}$$

¡Estudia
el
problema!

$$y = k(x-a)^2 + b$$

completable

$$y = Ax^2 + Bx + C$$

decompletable

~~$$y = 4(x+3)^2 + 1$$~~

~~$$y = 4(x^2 + 6x + 9) + 1$$~~

~~$$y = 4x^2 + 24x + 36 + 1$$~~

$$y = 4x^2 + 24x + 37$$



$$y = 4x^2 + 24x + 37$$

$$y - 37 = 4x^2 + 24x$$

$$y - 37 = 4(x^2 + 6x)$$

$$\frac{y - 37}{4} = x^2 + 6x$$

$$\frac{y - 37}{4} = (x + 3)^2 - 9$$

$$y - 37 = 4(x + 3)^2 - 36$$

$$y = 4(x + 3)^2 - 36 + 37$$

$$y = 4(x + 3)^2 + 1$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a+b)^2 - b^2 = a^2 + 2ab$$

0 Two

$$y = 2(x-1)^2 + 3$$

$$y = 2(x^2 - 2x + 1) + 3$$

$$y = 2x^2 - 4x + 2 + 3$$

$$y = 2x^2 - 4x + 5$$

$$y = 2(x-1)^2 - 2 + 5$$

$$y = 2(x-1)^2 + 3$$

$$y - 5 = 2x^2 - 4x$$

$$y - 5 = 2 \cdot (x^2 - 2x)$$

$$\frac{y-5}{2} = x^2 - 2x$$

$$\frac{y-5}{2} = (x-1)^2 - 1$$

$$y - 5 = 2(x-1)^2 - 2$$