TRIBUTOS

Semana #10

Ecuaciones e Igualdades

Hallar: C.S

$A = Bx$ (Comparación)

- Igualdad
  - Ecuaciones ($3x-1=2$)
    - Compatible (Admite CS)
      - determ. CS finito
      - indeter. CS inf.
    - Incompatible (No CS) $0.x=0$; $x^0=1$
  - I. Absoluta (Identidades) $(a+b)(a-b)=a^2-b^2$
    - Absurdos
    - contradicc.
    - $2=3$
    - $(\emptyset)$

- Lineales
- Cuadráticas
- fraccionarias
- Irracionales

Teorema: (Cardano Vietta)

$Ax^2+Bx+C=0$

raices: x_1, x_2

- $x_1+x_2=-\frac{B}{A}$
- $x_1 \cdot x_2=\frac{C}{A}$
- $\frac{1}{x_1}+\frac{1}{x_2}=-\frac{B}{C}$
- $x_1-x_2=\frac{\sqrt{\Delta}}{A}$
- Simétricas: $(B=0)$
- Recíprocas: $(A=C)$

$Z=a+$

Cuadrátic

forma: A

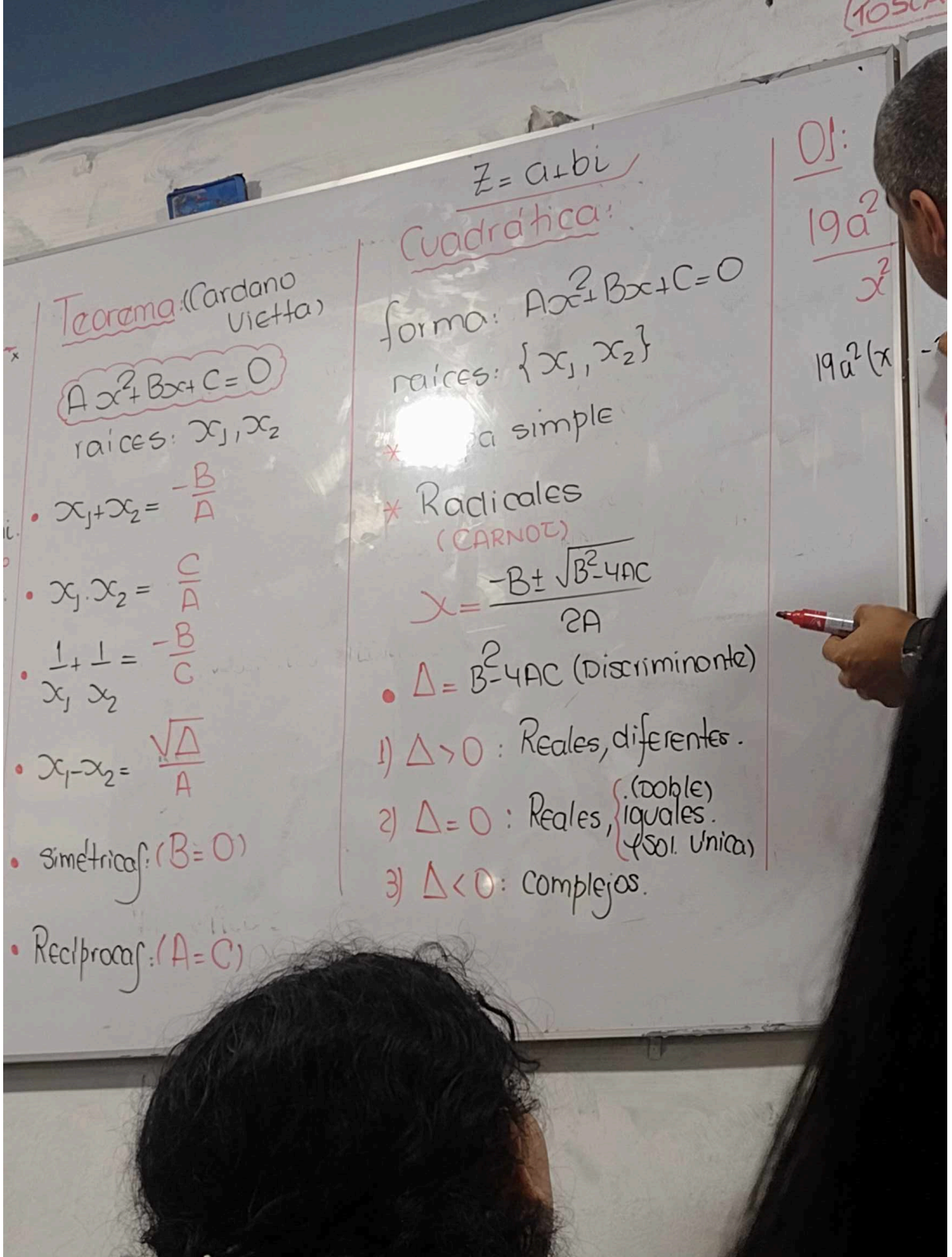
CS: {x

* Aspa sin
* Radicale (CARNOT

$x=\frac{-B\pm}{}$

- $\Delta = B^2-4A$

1) $\Delta>0$: R
2) $\Delta=0$:
3) $\Delta<0$:


Z = a + bi
Cuadrática:
Forma: $Ax^2 + Bx + C = 0$
raíces: $\{x_1, x_2\}$
* a simple
* Radicales (CARNOT)
$x = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$
• $\Delta = B^2 - 4AC$ (Discriminante)
1) $\Delta > 0$: Reales, diferentes.
2) $\Delta = 0$: Reales, (doble) iguales. (sol. única)
3) $\Delta < 0$: Complejos.
Teorema: (Cardano Vietta)
$Ax^2 + Bx + C = 0$
raíces: x_1, x_2
• $x_1 + x_2 = \frac{-B}{A}$
• $x_1 \cdot x_2 = \frac{C}{A}$
• $\frac{1}{x_1} + \frac{1}{x_2} = \frac{-B}{C}$
• $x_1 - x_2 = \frac{\sqrt{\Delta}}{A}$
• Simétricas: (B = 0)
• Recíprocas: (A = C)
01:
$19a^2$
x^2
$19a^2(x$

(TOSCANO)

$Z = a + bi$

Cuadrática:

$Ax^2 + Bx + C = 0$

raíces: $\{x_1, x_2\}$

* Aspa simple
* Radicales (CARNOT)

$$x = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

- $\Delta = B^2 - 4AC$ (Discriminante)

1) $\Delta > 0$: Reales, diferentes.
2) $\Delta = 0$: Reales, { (Doble) iguales. (y sol. única)
3) $\Delta < 0$: Complejos.

rema: (Cardano Vietta)

$x^2 + Bx + C = 0$

ices: x_1, x_2

$x_2 = -\frac{B}{A}$

$x_2 = \frac{C}{A}$

$\frac{1}{x_2} = -\frac{B}{C}$

$x_2 = \frac{\sqrt{\Delta}}{A}$

trica: $(B = 0)$

roca: $(A = C)$

01:

$\frac{19a^2}{x^2}(x-3) + 3$

$\frac{19a^2(x-3)}{x^2} +$

• primer

42

MITAD

$x^2 + \left(\frac{mn}{52} - 7\right)x + \frac{m+n}{m-n} = 0$

nira

nGaL.

$\frac{mn}{52} - 7 = 1$

$\frac{mn}{52} = 8 \quad \frac{416}{26}$

$mn = 416$

$n = 16$

$= \frac{26+16}{26-16} = \frac{42}{10} = 4{,}2$

04: $n = 5, 2, -1$

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

$n = 5$: $18x = 12 \rightarrow x = 2/3$: E.C.D

$n = 2$: $0.x = 0$: E.C.I

$n = -1$: $0x = 0$: E.C.I

OJO

$Ax + B = 0$

$A = 0 \wedge B = 0$: E.C.I

$A = 0 \wedge B \neq 0$: E.I

$A \neq 0 \wedge B = 0$: E.C.D

$A \neq 0 \wedge B \neq 0$: E.C.D.

07: $\Delta = 25$

$(k-2)x^2 - (2k-1)x + k - 1 = 0$

$Ax^2 + Bx + C = 0$

$A = k - 2$

$B = 1 - 2k$

$C = k - 1$

$B^2 - 4AC = 25$

$(1-2k)^2 - 4(k-2)(k-1) = 25$

$1 - 4k + 4k^2 - 4(k^2 - 3k + 2) = 25$

$1 - 4k + 4k^2 - 4k^2 + 12k - 8 = 25$

$8k - 7 = 25$

$8k = 32$

$k = 4$ = (2)

$2x^2 - 7x + 3 = 0$

$2x \quad -1 = 0$

$x \quad -3 = 0$

$x = 1/2$

$x = 3$

$\therefore CS = \left\{\frac{1}{2}, 3\right\}$

: E.A.I

$$(x_1+x_2)^2-(x_1-x_2)^2 = 4x_1 \cdot x_2$$

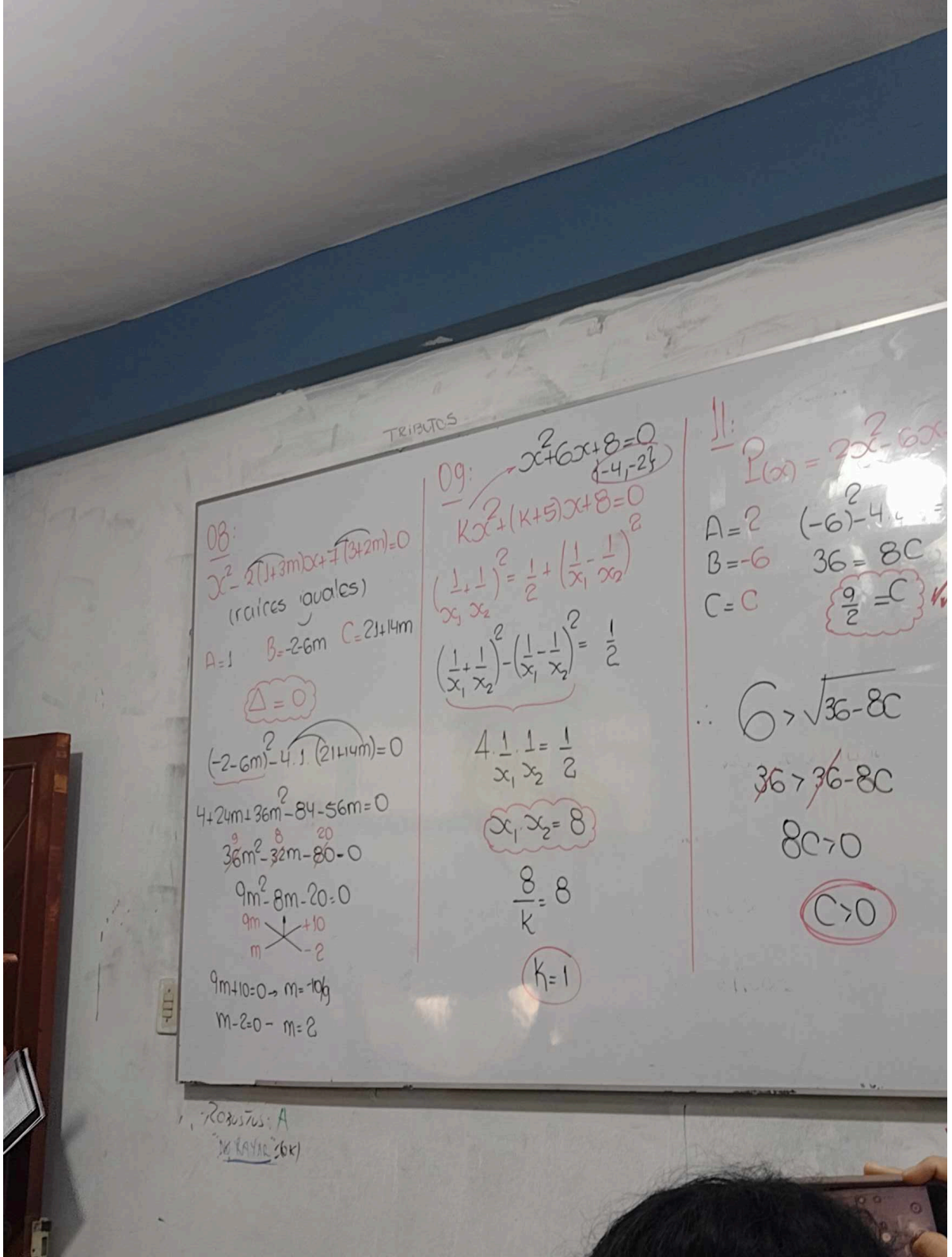
$$\frac{B^2}{A^2}-(x_1-x_2)^2 = 4\frac{C}{A}$$

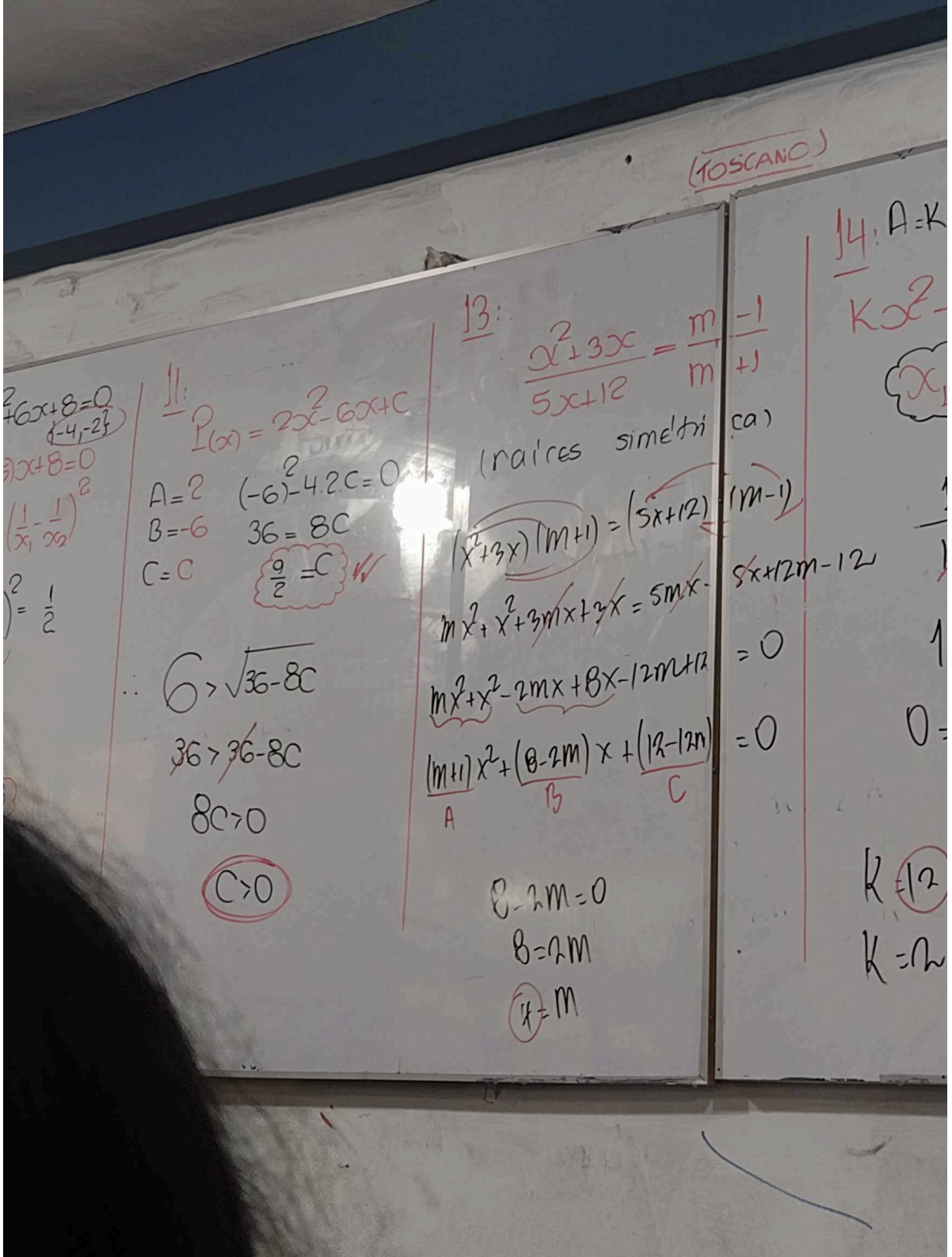
$$\frac{B^2}{A^2}-\frac{4CA}{A^2} = (x_1-x_2)^2$$

$$\frac{B^2-4AC}{A^2} = (x_1-x_2)^2$$

$$\frac{\sqrt{\Delta}}{A}$$

X CONJUGADA:


TRIBUTOS
08:
$x^2 - 2(1+3m)x + 7(3+2m) = 0$
(raízes iguais)
$A=1 \quad B=-2-6m \quad C=21+14m$
$\Delta = 0$
$(-2-6m)^2 - 4.1.(21+14m) = 0$
$4+24m+36m^2-84-56m=0$
$36m^2-32m-80=0$
$9m^2-8m-20=0$
$9m \quad +10$
$m \quad -2$
$9m+10=0 \rightarrow m=-10/9$
$m-2=0 \rightarrow m=2$
09:
$x^2+6x+8=0$
$\{-4,-2\}$
$kx^2+(k+5)x+8=0$
$\left(\frac{1}{x_1}+\frac{1}{x_2}\right)^2 = \frac{1}{2} + \left(\frac{1}{x_1}-\frac{1}{x_2}\right)^2$
$\left(\frac{1}{x_1}+\frac{1}{x_2}\right)^2 - \left(\frac{1}{x_1}-\frac{1}{x_2}\right)^2 = \frac{1}{2}$
$4 \cdot \frac{1}{x_1} \cdot \frac{1}{x_2} = \frac{1}{2}$
$x_1 \cdot x_2 = 8$
$\frac{8}{k} = 8$
$k=1$
11:
$P(x) = 2x^2 - 6x$
$A=2 \quad (-6)^2 - 4.$
$B=-6 \quad 36 = 8C$
$C=C \quad \frac{9}{2} = C$
$\therefore 6 > \sqrt{36-8C}$
$36 > 36-8C$
$8C > 0$
$C > 0$
Resposta: A


(TOSCANO)
11:
$P(x) = 2x^2 - 6x + C$
$A = 2$
$B = -6$
$C = C$
$(-6)^2 - 4.2C = 0$
$36 = 8C$
$\frac{9}{2} = C$
$\therefore 6 > \sqrt{36 - 8C}$
$36 > 36 - 8C$
$8C > 0$
$C > 0$
13:
$\frac{x^2+3x}{5x+12} = \frac{m}{m+1}$
(raíces simétricas)
$(x^2+3x)(m+1) = (5x+12)(m-1)$
$mx^2 + x^2 + 3mx + 3x = 5mx - 5x + 12m - 12$
$mx^2 + x^2 - 2mx + 8x - 12m + 12 = 0$
$(m+1)x^2 + (8-2m)x + (12-12m) = 0$
A B C
$8 - 2m = 0$
$8 = 2m$
$4 = m$
14: A = K
Kx^2
$K = 12$
$K = 2$

(TOSCANO)

$Z = a + bi$

drática:

$Ax^2 + Bx + C = 0$

$\{x_1, x_2\}$

a simple

icales

ARNOT)

$\frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$

$^2 - 4AC$ (Discriminante)

: Reales, diferentes.

: Reales, (doble) iguales. (Sol. Unica)

: Complejos.

01:

- primer grado (Lineales)

$\frac{19a^2}{x^2}(x-3) + 3a\left(\frac{2}{x} - \frac{7}{x^2}\right) = -x$

$\frac{19a^2(x-3)}{x^2} + \frac{3a(2x-7)}{x^2} = -x$

$19a^2x - 57a^2 + 6ax - 21a = -x^3$

$(19a^2 + 6a)x + (-57a^2 - 21a) = -x^3$

Incompatible.

$\therefore CS = \Phi \{\}$ //

02:

$\sqrt{2}\left(\frac{m}{13} - 2\right)x^2 + \left(\frac{mn}{52} - 7\right)x + \frac{m+n}{m-n} = 0$

✓ mónica

✓ Lineal.

$\frac{m}{13} - 2 = 0$

$\frac{m}{13} = 2$

$m = 26$

$\frac{mn}{52} - 7 = 1$

$\frac{mn}{52} = 8$ $\frac{416}{26}$

$mn = 416$

$n = 16$

$\therefore T.IND = \frac{m+n}{m-n} = \frac{26+16}{26-16} = \frac{42}{10} = 4{,}2$ //

04:

$(n^2 - n$

$n = 5$ 18

$n = 2$

$n = -1$

A = C

A = C

A ≠ C

A ≠

(TOSCANO)

42

MITAD

14: $A=K \quad B=5-K \quad C=1$

$Kx^2-(K-5)x+1=0$

$x_1 \cdot x_2 = x_1 - x_2$

$\frac{1}{K} = \frac{\sqrt{(5-K)^2-4K\cdot 1}}{K}$

$1 = 25-10K+K^2-4K$

$0 = K^2-14K+24$

$K \quad -12$

$K \quad -2$

$K=12$ //

$K=2$

17:

$\sqrt{\frac{x^2-2x+14}{x^2+4x+2}} + \sqrt{\frac{x^2+4x+2}{x^2-2x+14}} = 2$

$\frac{a}{b}+\frac{b}{a}=2 \rightarrow a=b$

$\therefore x^2-2x+14 = x^2+4x+2$

$12 = 6x$

$2=x$

22:

$(2m-1)x^2+(5m+1)x-3=0$

raíz: -3

$A=2m-1$

$B=5m+1$

$C=-3$

$(2m-1)9+(5m+1)(-3)-3=0$

$18m-9-15m-3-3=0$

$3m=15$

$m=5$ //

$9x^2+26x-3=0$

$9x \quad -1$

$x \quad +3$

$x=1/9$

$x=-3$

X

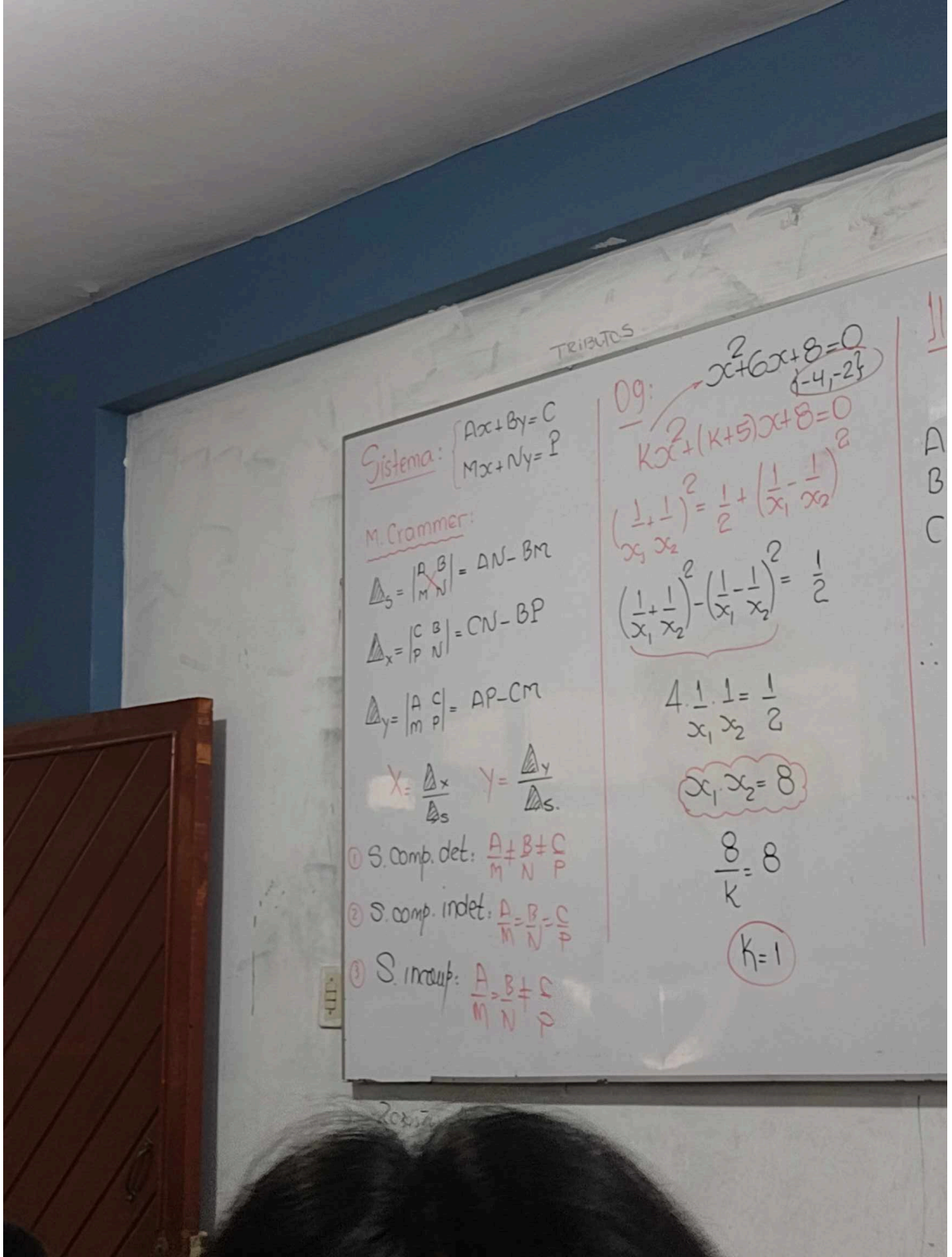
CONMIGO MATA:

AMA

SUA: LADRÓN Y

QUELLA: OCIOSO NO RAYAR

HUELA: MENTIROSO


TRIBUTOS
Sistema: $\begin{cases} Ax+By=C \\ Mx+Ny=P \end{cases}$
M. Crammer:
$\Delta_s = \begin{vmatrix} A & B \\ M & N \end{vmatrix} = AN - BM$
$\Delta_x = \begin{vmatrix} C & B \\ P & N \end{vmatrix} = CN - BP$
$\Delta_y = \begin{vmatrix} A & C \\ M & P \end{vmatrix} = AP - CM$
$X = \frac{\Delta_x}{\Delta_s}$ $Y = \frac{\Delta_y}{\Delta_s}$.
① S. comp. det: $\frac{A}{M} \neq \frac{B}{N} \neq \frac{C}{P}$
② S. comp. indet: $\frac{A}{M} = \frac{B}{N} = \frac{C}{P}$
③ S. incomp: $\frac{A}{M} = \frac{B}{N} \neq \frac{C}{P}$
09:
$x^2+6x+8=0$
$\{-4,-2\}$
$Kx^2+(K+5)x+8=0$
$\left(\frac{1}{x_1}+\frac{1}{x_2}\right)^2 = \frac{1}{2} + \left(\frac{1}{x_1}-\frac{1}{x_2}\right)^2$
$\left(\frac{1}{x_1}+\frac{1}{x_2}\right)^2 - \left(\frac{1}{x_1}-\frac{1}{x_2}\right)^2 = \frac{1}{2}$
$4 \cdot \frac{1}{x_1} \cdot \frac{1}{x_2} = \frac{1}{2}$
$x_1 \cdot x_2 = 8$
$\frac{8}{K} = 8$
$K=1$