

Soluciones - Sesión 27/03/2020

1 Factoriza sacando factor común e ...

a) $2x^2 - 18 = 2(x^2 - 9) = 2(x+3)(x-3)$

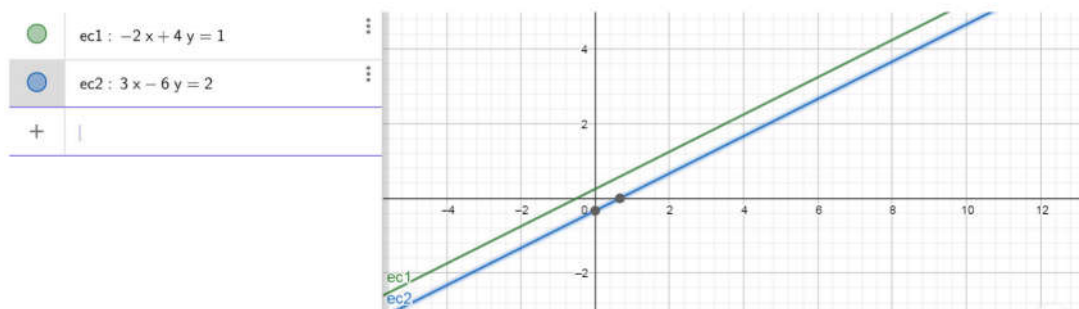
b) $(x-2) \cdot (5x+10) = (x-2) \cdot 5(x+2) = 5(x+2)(x-2)$

c) $(-x-3) \cdot (x-3) = (-1) \cdot (x+3) \cdot (x-3)$

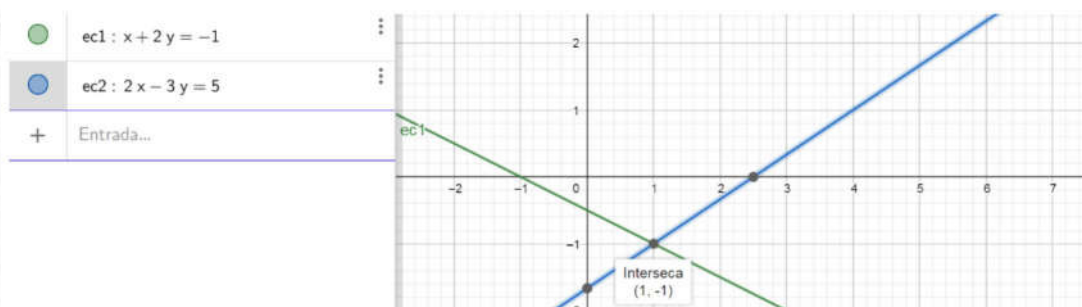
d) $2x^2 + 12x + 18 = 2(x^2 + 6x + 9) = 2 \cdot (x+3)^2$

2

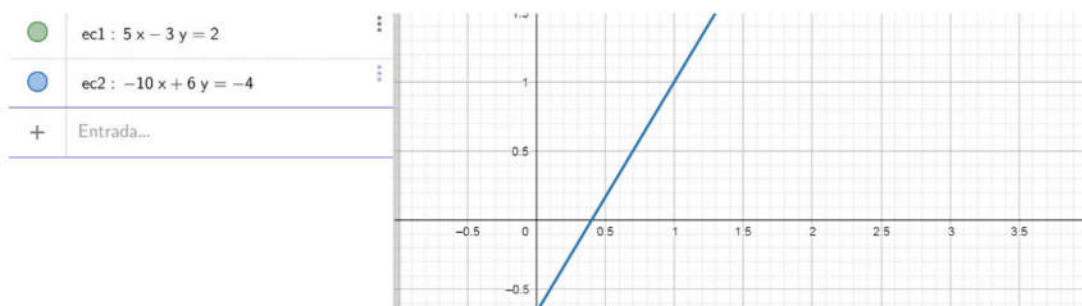
a) SISTEMA INCOMPATIBLE



b) SISTEMA COMPATIBLE DETERMINADO



c) SISTEMA COMPATIBLE INDETERMINADO

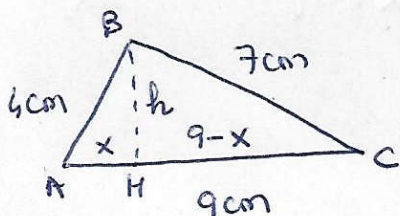


Ex 3

- Perímetro cubo = $4l = 4 \cdot 7 = 28 \text{ cm}$
- Diámetro cubo = Perímetro cubo = 28 cm
- Área cubo = $4 \cdot r^2 = \pi \cdot \left(\frac{d}{2}\right)^2 \approx \underline{\underline{615,75 \text{ cm}^2}}$

Ex 4

a) $\overline{AB} = 4 \text{ cm}$ $\overline{BC} = 7 \text{ cm}$ $\overline{CA} = 9 \text{ cm}$



$\triangle AMB$: $4^2 = x^2 + h^2 \Leftrightarrow h^2 = 4^2 - x^2$

$\triangle HCB$: $7^2 = (9-x)^2 + h^2 \Leftrightarrow h^2 = 7^2 - (9-x)^2$

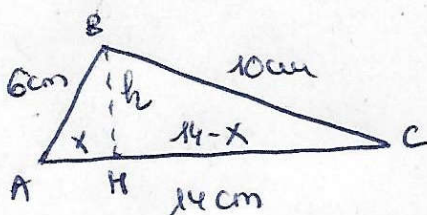
Iguando ambas expresiones: $4^2 - x^2 = 7^2 - (9-x)^2$ obtenemos o valor de "x":

$$16 - x^2 = 49 - (81 - 18x + x^2) \Leftrightarrow 16 - x^2 = 49 - 81 + 18x - x^2$$

$$\Leftrightarrow 48 = 18x \Leftrightarrow \boxed{x = \frac{8}{3}}$$

con $x = \frac{8}{3}$ calculamos h: $h^2 = 4^2 - \left(\frac{8}{3}\right)^2 \Leftrightarrow \left[h = \sqrt{16 - \frac{64}{9}} = \sqrt{\frac{80}{9}} \right]$
 $\approx \underline{\underline{2,98 \text{ cm}}}$

b) $\overline{AB} = 6 \text{ cm}$, $\overline{BC} = 10 \text{ cm}$, $\overline{CA} = 14 \text{ cm}$



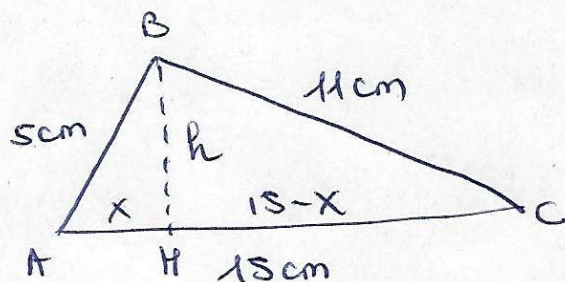
$\triangle AMB$: $6^2 = x^2 + h^2 \Leftrightarrow h^2 = 6^2 - x^2$

$\triangle HCB$: $10^2 = (14-x)^2 + h^2 \Leftrightarrow h^2 = 10^2 - (14-x)^2$

$$6^2 - x^2 = 10^2 - (14-x)^2 \Leftrightarrow 36 - x^2 = 100 - (196 - 28x + x^2) \Leftrightarrow x = 33/7$$

Por lo tanto, $h^2 = 6^2 - \left(\frac{33}{7}\right)^2 \Leftrightarrow \boxed{h \approx 3,11 \text{ cm}}$

c) $\overline{AB} = 5\text{cm}$ $\overline{BC} = 11\text{cm}$ $\overline{CA} = 15\text{cm}$



$\triangle AHB$: $5^2 = x^2 + h^2 \Leftrightarrow h^2 = 5^2 - x^2$

$\triangle HCB$: $11^2 = (15-x)^2 + h^2 \Leftrightarrow h^2 = 11^2 - (15-x)^2$

Iguando ambas expresiones: $5^2 - x^2 = 11^2 - (15-x)^2 \Leftrightarrow$

$25 - x^2 = 121 - (225 - 30x + x^2) \Leftrightarrow 25 - x^2 = -104 + 30x - x^2$

$\Leftrightarrow 129 = 30x \Leftrightarrow \boxed{x = \frac{43}{10}}$

Por tanto: $h^2 = 5^2 - \left(\frac{43}{10}\right)^2 \Leftrightarrow \boxed{h = \sqrt{\frac{651}{100}} \approx \underline{\underline{2.55\text{cm}}}}$

Ex 5

a) $\begin{cases} -2x + 4y = 1 \\ 3x - 6y = 2 \end{cases}$

$-\frac{2}{3} = \frac{4}{-6} \neq \frac{1}{2}$

Sistema incompatible

b) $\begin{cases} x + 2y = -1 \\ 2x - 3y = 5 \end{cases}$

$\frac{1}{2} \neq \frac{2}{-3} \neq -\frac{1}{5}$

Sistema compatible
determinado

c) $\begin{cases} 5x - 3y = 2 \\ -10x + 6y = -4 \end{cases}$

$\frac{5}{-10} = \frac{-3}{6} = \frac{2}{-4}$

Sistema compatible
indeterminado