

Plus De
Bonnes
Notes

Rappel:
$$S: \begin{cases} L_1 \begin{cases} 6x - 4y = 0 \end{cases} \\ L_2 \begin{cases} 3x + 7y = 4. \end{cases} \end{cases}$$

$$D = 6 \times 7 - 3 \times (-4) = 42 + 12 = 54 \neq 0$$

S admet donc un unique couple de solution $S = \{(x_0; y_0)\}$.

Méthode 1: Combinaison

$$\begin{cases} L_1 \begin{cases} 6x - 4y = 0. \end{cases} \\ 2L_2 \begin{cases} 6x + 14y = 8. \end{cases} \end{cases}$$

$$\begin{aligned} L_1 - 2L_2: & -4y - 14y = 0 - 8. \\ & -18y = -8. \\ & y = \frac{-8}{-18} = \frac{4}{9} \end{aligned}$$

$$6x - 4 \times \frac{4}{9} = 0.$$

$$6x - \frac{16}{9} = 0.$$

$$6x = \frac{16}{9}.$$

$$x = \frac{16}{9 \times 6}$$

$$x = \frac{16}{54} = \frac{8}{27}$$

$$S = \left\{ \left(\frac{8}{27}; \frac{4}{9} \right) \right\}.$$

Méthode 2:
Substitution $\begin{cases} 6x - 4y = 0 \\ 3x + 7y = 4 \end{cases}$

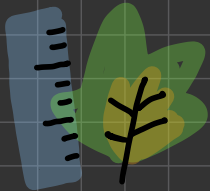
$$\Leftrightarrow \begin{cases} x = \frac{4y}{6} = \frac{2}{3}y. \\ 3 \times \frac{2}{3}y + 7y = 4. \end{cases}$$

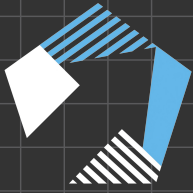
$$\Leftrightarrow \begin{cases} x = \frac{2}{3}y. \\ 9y = 4 \end{cases}$$

$$\Leftrightarrow \begin{cases} x = \frac{2}{3} \times \frac{4}{9} = \frac{8}{27}. \\ y = \frac{4}{9} \end{cases}$$

$$S = \left\{ \left(\frac{8}{27}; \frac{4}{9} \right) \right\}.$$

$$ax + by + c = 0.$$





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EX02:

$$6. \begin{cases} \frac{2}{x} + \frac{1}{y} = 1 \\ \frac{3}{x} + \frac{2}{y} = 2 \end{cases}$$

$$X = \frac{1}{x}$$

$$Y = \frac{1}{y}$$

$$abc \times 2 = 8.$$

$$x \cdot 2 = 8.$$

$$x = \frac{8}{2} = 4.$$

$$abc = 4.$$

$$\begin{cases} 2 \times \frac{1}{x} + \frac{1}{y} = 1 \\ 3 \times \frac{1}{x} + 2 \times \frac{1}{y} = 2 \end{cases}$$

$$\Leftrightarrow \begin{cases} 2X + Y = 1 \\ 3X + 2Y = 2 \end{cases}$$

$$\Leftrightarrow \begin{cases} Y = 1 - 2X \\ 3X + 2(1 - 2X) = 2 \end{cases}$$

$$\Leftrightarrow \begin{cases} Y = 1 - 2X \\ 3X + 2 - 4X = 2 \end{cases}$$

$$\Leftrightarrow \begin{cases} Y = 1 - 2 \times 0 = 1 \\ X = 0 ; Y = 0 \end{cases}$$

$$X = 0 \text{ et } Y = 1.$$

Impossible $\frac{1}{x} = \frac{0}{2}$ et $\frac{1}{y} = 1.$

$$\text{et } Y = 1.$$

L'équation n'admet
donc aucune solution.

$$\begin{aligned} 2 \times 0 &= 1 \times 2 \\ 0 &= 2 \end{aligned}$$

y (écart).

EX03:

x : personne 1

z : femme 2.

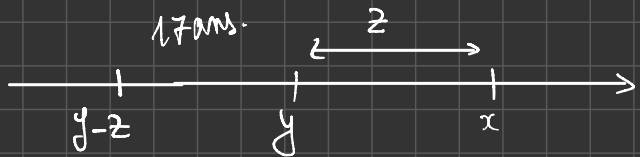
$$x > y.$$

$$x = 2 \times y$$

$$= 63.$$

20 ans

17 ans.



y

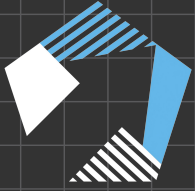
$$x + x + z = 63$$

$$2x + x - y = 63.$$

$$y + z + x + z = 63.$$

$$x = 2 \times (y - z)$$





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1. J'ai deux fois l'âge que vous aviez quand j'avais l'âge que vous avez. Quand vous aurez mon âge, nos deux âges réunis feront 63 ans. Quels sont nos âges ?

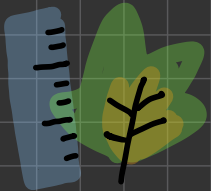
$$\begin{cases} 3x - y = 63 \\ x = 2x(y - (x - y)) \end{cases}$$

$$\begin{cases} 3x - y = 63 \\ x = 2y - 2(x - y) \end{cases}$$

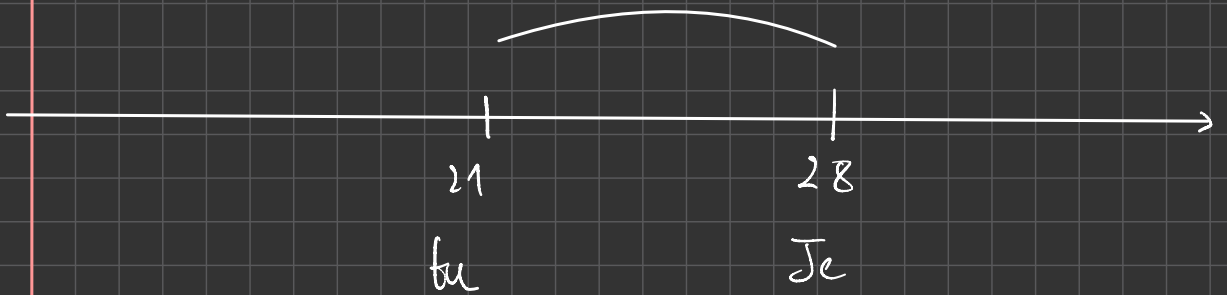
$$\begin{cases} 3x - y = 63 \\ 3x - 4y = 0 \end{cases}$$

$$\begin{aligned} 3y &= 63 \\ y &= 21 \end{aligned}$$

$$\begin{aligned} 3x - 4 \times 21 &= 0 \\ 3x &= 84 \\ x &= \frac{84}{3} = 28 \end{aligned}$$



+7ans.



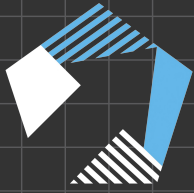
2.

$$v = \frac{d}{\Delta t} = \frac{d}{t_1 - t_0}$$

$$\begin{cases} 80 = \frac{d}{12 - t_0} \\ 60 = \frac{d}{13 - t_0} \end{cases}$$

$$\Leftrightarrow \begin{cases} 80(12 - t_0) = d \\ 60(13 - t_0) = d \end{cases}$$





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$$80(12-t_0) = 60(13-t_0)$$
$$960 - 80t_0 = 780 - 60t_0$$

$$-80t_0 + 60t_0 = 780 - 960$$

$$-20t_0 = -180$$

$$t_0 = \frac{-180}{-20} = 9$$

$$\begin{cases} d = 80(12-9) = 80 \times 3 = 240 \text{ km.} \\ d = 60(13-9) = 60 \times 4 = 240 \text{ km.} \end{cases}$$

EX04:

$$a=2; b=3$$

$$d: ax+by+c=0$$
$$\vec{u} \begin{pmatrix} -b \\ a \end{pmatrix}$$

1.

$$d: 2x+3y-5=0$$

$$d': 4x+6y+3=0$$

$$\vec{u} \begin{pmatrix} -3 \\ 2 \end{pmatrix}$$

$$\vec{v} \begin{pmatrix} -6 \\ 4 \end{pmatrix}$$

$$xy' - x'y = -3 \times 4 - 2 \times (-6) = -12 + 12 = 0$$

\vec{u} et \vec{v} sont colinéaires donc d et d' sont parallèles.

