Math 1N — Mini-test n°3 — bl [/23]

$$\frac{5x}{x-3} + \frac{8}{2x+6} = \frac{90}{x^2-9}$$

D : pb si $x-3=0$ ou pb si $2x+6=0$ ou $x^2-9=0$

$x=3$; $2(x+3)=0$; $(x+3)(x-3)=0$

$x+3=0$; $x=-3$ ou $x=3$

⑥ donc $D = \mathbb{R} \setminus \{-3;3\}$

Déh. commun : $\frac{5x}{x-3} + \frac{8}{2(x+3)} = \frac{90}{(x-3)(x+3)}$

⑥ $\frac{5x(x+3)\cdot 2}{2(x-3)(x+3)} + \frac{8(x-3)}{2(x+3)(x-3)} = \frac{90\cdot 2}{2(x-3)(x+3)}$

Résolution : $\frac{5x(x+3)\cdot 2 + 8(x-3)}{2(x-3)(x+3)} = \frac{180}{2(x-3)(x+3)}$ ↓ $\cdot 2(x+3)(x-3)$

$\Leftrightarrow 5x(x+3)\cdot 2 + 8(x-3) = 180$

$\Leftrightarrow 10x^2 + 30x + 8x - 24 = 180$

$\Leftrightarrow 10x^2 + 38x - 204 = 0$

$\Leftrightarrow 2(5x^2 + 19x - 102) = 0$ ↓ $:2$

④ $\Leftrightarrow 5x^2 + 19x - 102 = 0$

$\Delta = 19^2 - 4\cdot 5\cdot(-102)$

$\Delta = 2401$

$x = \frac{-19 \pm \sqrt{2401}}{2\cdot 5}$

③ $x = \frac{-19 \pm 49}{10}$ → $x_1 = \frac{-19+49}{10} = 3$; $x_2 = \frac{-19-49}{10} = -\frac{68}{10} = -\frac{34}{5} = -6{,}8$

Solution : ④ $\left.\begin{array}{l} 3 \notin D \\ -\frac{34}{5} \in D \end{array}\right\} \Rightarrow S = \left\{-\frac{34}{5}\right\} = \{-6{,}8\}$