Ex 2.5.M

c) $\dfrac{1}{x+1} + \dfrac{1}{x+3} + \dfrac{3}{4} = 0$ $\quad \big| \cdot 4(x+1)(x+3)$ v.i. $\quad -1$ et -3

ppmc $= 4(x+1)(x+3)$

$4(x+3) + 4(x+1) + 3(x+1)(x+3) = 0$

$4x + 12 + 4x + 4 + 3(x^2 + 4x + 3) = 0$

$8x + 16 + 3x^2 + 12x + 9 = 0$

$3x^2 + 20x + 25 = 0 \qquad\qquad \triangle = 20^2 - 4 \cdot 3 \cdot 25 = 100$

$x_{1,2} = \dfrac{-20 \pm 10}{6} = \begin{cases} -5 \quad \textcolor{red}{\checkmark} \\[2mm] -\dfrac{10}{6} = -\dfrac{5}{3} \quad \textcolor{red}{\checkmark} \end{cases}$

$\Rightarrow S = \left\{ -5 \ ; \ -\dfrac{5}{3} \right\}$

d) $\dfrac{x}{x-1} = \dfrac{3x-4}{(x-1)(x-2)}$ $\quad\big|\cdot (x-1)(x-2)$

$x(x-2) = 3x-4$

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

$x^2 - 5x + 4 = 0$

$(x-4)(x-1) = 0$

4 ✓   1 ✗ $\Rightarrow$ $S = \{4\}$

2.5.12

h) $\dfrac{x+4}{x} - \dfrac{1}{x+4} = \dfrac{4}{\underbrace{x^2+4x}_{x(x+4)}}$ $\Big|\cdot x(x+4)$ v.i : -4 et 0

$(x+4)^2 - x = 4$

$x^2 + 8x + 16 - x = 4$

$x^2 + 7x + 12 = 0$

$(x+3)(x+4) = 0$

$-3\ \checkmark \qquad -4\ \textsf{X}$

$\Rightarrow \quad S = \{-3\}$

i) $\dfrac{1}{\underbrace{x^2-x}_{x(x-1)}} + \dfrac{5}{\underbrace{x^2+x}_{x(x+1)}} = \dfrac{4}{\underbrace{x^2-1}_{(x+1)(x-1)}}$ $\Big|$ $x(x-1)(x+1)$ v.i : -1 et 1 et 0

$$\dfrac{1\cdot(x+1)}{x(x-1)(x+1)} + \dfrac{5(x-1)}{x(x-1)(x+1)} = \dfrac{4x}{x(x-1)(x+1)}$$

$$x+1 + 5x-5 = 4x$$

$$2x-4 = 0$$

$$x = 2 \;\textcolor{red}{\checkmark} \qquad\qquad \Rightarrow \quad S = \{2\}$$

j) $\dfrac{x+3}{3x-1} + \dfrac{1}{4} = \dfrac{2x-9}{4-12x} + \dfrac{1}{1}$ $\Big| \cdot 4(3x-1)$ U.i. $\dfrac{1}{3}$

$\underbrace{}$
$= 4(1-3x)$
$= -4(3x-1)$

$4(x+3) + (3x-1) = -(2x-9) + 4(3x-1)$

$4x + 12 + 3x - 1 = -2x + 9 + 12x - 4$

$7x + 11 \qquad = \quad 10x + 5$

$-3x \qquad\qquad = \quad -6$

$x \qquad\qquad = \quad 2 \quad \checkmark \qquad \Rightarrow \quad S = \{2\}$