1. $\dfrac{x-1}{x-2}+\dfrac{x+2}{1-x}=\dfrac{x+1}{x^2-3x+2}$

$\dfrac{x-1}{x-2}-\dfrac{x+2}{x-1}=\dfrac{x+1}{(x-2)(x-1)}$

$\dfrac{(x-1)^2-(x+2)(x-2)-(x+1)}{(x-2)(x-1)}=0$ $\quad$ *c.a.*: $x\neq 2;\ x\neq 1$

$x^2-2x+1-x^2+4-x-1=0$ $\quad$ $x=\dfrac{4}{3}$

2. $\dfrac{\dfrac{x}{x-2}-1}{\dfrac{x}{x-2}+1}=\dfrac{\dfrac{x}{x+2}-1}{\dfrac{x}{x+2}+1}$

$\dfrac{x-x+2}{x-2}\cdot\dfrac{x-2}{x+x-2}=\dfrac{x-x-2}{x+2}\cdot\dfrac{x+2}{x+x+2}$ $\quad$ *c.a.*: $x\neq\pm 2$

$\dfrac{2}{2(x-1)}=-\dfrac{2}{2(x+1)}$ $\quad$ *c.a.*: $x\neq\pm 1$

$x+1=-x+1$ $\quad$ $x=0$

3. $\left(\dfrac{5x}{5x+2}+\dfrac{2}{5x-2}\right):\left(\dfrac{5x}{5x-2}-\dfrac{2}{5x+2}\right)=5x-1$

$\dfrac{25x^2-10x+10x+4}{(5x+2)(5x-2)}:\dfrac{25x^2+10x-10x+4}{(5x-2)(5x+2)}=5x-1$

$\dfrac{25x^2+4}{(5x+2)(5x-2)}\cdot\dfrac{(5x-2)(5x+2)}{25x^2+4}=5x-1$ $\quad$ *c.a.*: $x\neq\pm\dfrac{2}{5}$

$1=5x-1$ $\quad$ $x=\dfrac{2}{5}$ *non accettabile per le c.a.* $\Rightarrow$ *eq.ne impossibile*

4. $\begin{cases}(x+y)^3+x-2y+4=3xy(x+y)+(x+y)(x^2-xy+y^2)+y\\ 3y=x+6\end{cases}$

$\begin{cases}x^3+3x^2y+3xy^2+y^3+x-2y+4=3x^2y+3xy^2+x^3+y^3+y\\ 3y=x+6\end{cases}$

$\begin{cases}x-3y=-4\\ x-3y=6\end{cases}$ $\Rightarrow$ *sistema impossibile*

5. $\begin{cases} \dfrac{4x-2y}{2}+x=-3-2y \\ x+y+2=0 \end{cases}$

$\begin{cases} 2x-y+x+2y=-3 \\ x+y=-2 \end{cases}$

$\begin{cases} 3x+y=-3 \\ x+y=-2 \end{cases}$ $\qquad$ $\begin{cases} 3x+y=-3 \\ 3x+3y=-6 \end{cases}$

$2x = -1$ $\qquad$ $2y = -3$

$\Rightarrow x=-\dfrac{1}{2}$ $\qquad$ $\Rightarrow y=-\dfrac{3}{2}$

$\begin{cases} x=-\dfrac{1}{2} \\ y=-\dfrac{3}{2} \end{cases}$

6. $N_1 = 2x$ $\qquad$ $N_2 = 2x+2$

$2x+2x+2=42 \qquad \Rightarrow x=10$

$N_1 = 20$ $\qquad$ $N_2 = 22$

7. $\dfrac{2}{5}x+\dfrac{7}{20}x = 90 \qquad \Rightarrow \; x=120$

8. $N_1 = x$ $\qquad$ $N_2 = y$

$\begin{cases} y=3x+2 \\ \dfrac{x}{y}=\dfrac{2}{7} \end{cases}$ $\qquad$ $c.a.: y \neq 0$

$\begin{cases} y=3x+2 \\ \dfrac{x}{3x+2}=\dfrac{2}{7} \end{cases}$

$\begin{cases} y=3x+2 \\ 7x=6x+4 \end{cases}$ $\qquad$ $\begin{cases} x=4 \\ y=14 \end{cases}$