$$\frac{3 \log_{\frac{1}{2}} x}{\log_2 x - 1} = -4$$

C.E. $x > 0$

$\log_2 x \neq 1 \rightsquigarrow x \neq 2$

$\log_{\frac{1}{2}} x = \frac{\log_2 x}{\log_2 \frac{1}{2}} = -\log_2 x$

$$\frac{-3 \log_2 x}{\log_2 x - 1} = -4 \qquad \rightsquigarrow \qquad -3 \log_2 x = -4 \log_2 x + 4$$

$$\rightsquigarrow \qquad \log_2 x = 4 \qquad \rightsquigarrow \qquad x = 2^4 = 16 \quad \text{Accett.}$$

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n 464

$\log (x+5) - \log (4-x) + \cancel{\log (3x-1)} > \cancel{\log (3x-1)} \boxed{- \log (x+4)}$

$+ (-1) \log (x+4)$

$\log \frac{(x+5)}{(4-x)} > \log (x+4)^{-1} \qquad \rightsquigarrow \text{inj}$

C.E. $\begin{cases} x+5 > 0 \\ 4-x > 0 \\ 3x-1 > 0 \\ x+4 > 0 \end{cases}$ $\begin{cases} x > -5 \\ x < 4 \\ x > \frac{1}{3} \\ x > -4 \end{cases}$

$\frac{x+5}{4-x} > \frac{1}{x+4}$

$\rightsquigarrow \quad \frac{1}{3} < x < 4$

$\frac{(x+5)(x+4) - (4-x)}{(4-x)(x+4)} > 0$

$\frac{x^2 + 5x + 4x + 20 - 4 + x}{(4-x)(x+4)} > 0$

$\frac{x^2 + 10x + 16}{(4-x)(x+4)} > 0$

$N > 0 \qquad x^2 + 10x + 16 > 0 \qquad (x+8)(x+2) > 0$

$x = -8, \quad x = -2$

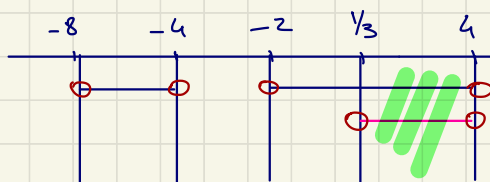$x < -8 \quad \vee \quad x > -2$

$D > 0 \qquad (4-x)(x+4) > 0 \qquad 4-x > 0 \qquad x < 4$

$x+4 > 0 \qquad x > -4$

	-8	-4	-2	4	
N	+ ○ −		− ○ +		+
D_1	+	+	+	○ +	−
D_2	−	− ○ +		○ +	+
	−	+	−	+	−

$$-8 < x < -4 \qquad \lor \qquad -2 < x < 4$$

Interseco con le C.E. $\underline{\text{Sol}}$

C.E.

$$-8 \quad -4 \quad -2 \quad \tfrac{1}{3} \quad 4$$

<u>Sol finale</u> : $\dfrac{1}{3} < x < 4$

$$\left(\tfrac{1}{3} \, ; \, 4 \right)$$

<u>n 469</u>

$$\log\left(2 + \tfrac{1}{x}\right) - \log\left(2 - \tfrac{1}{x}\right) < \log(2x+1) - \log(1-2x)$$

$$\log \tfrac{2x+1}{x} - \log \tfrac{2x-1}{x} < \log(2x+1) - \log(1-2x)$$

C.E.:
$$\begin{cases} 2 + \tfrac{1}{x} > 0 \\ 2 - \tfrac{1}{x} > 0 \\ 2x + 1 > 0 \\ 1 - 2x > 0 \end{cases} \qquad \begin{cases} \tfrac{2x+1}{x} > 0 \\ \tfrac{2x-1}{x} > 0 \\ x > -\tfrac{1}{2} \\ x < \tfrac{1}{2} \end{cases}$$

Le C.E. danno de
x non può assumere
nessun valore

$\Rightarrow$ Impossibile

$$\begin{cases} x < -\tfrac{1}{2} \quad \lor \quad x > 0 \\ x < 0 \quad \lor \quad x > \tfrac{1}{2} \\ x > -\tfrac{1}{2} \\ x < \tfrac{1}{2} \end{cases}$$

$$-\tfrac{1}{2} \qquad 0 \qquad \tfrac{1}{2}$$

$\log_2 \left(\log_{\frac{1}{2}} (x-6) \right) < 0 \quad \left(\log_2 (1) \right)$

$\underset{\text{3 inj}}{}$
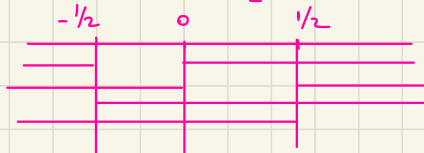
C.E. $\begin{cases} x-6 > 0 \\ \log_{\frac{1}{2}} (x-6) > 0 \quad (\log_{\frac{1}{2}} 1) \end{cases}$

$\log_{\frac{1}{2}} (x-6) < 1 \quad \left(\log_{\frac{1}{2}} \left(\frac{1}{2} \right) \right)$

$\underset{\text{3 inj}}{}$

$\begin{cases} x > 6 \\ x-6 < 1 \end{cases} \qquad \begin{cases} x > 6 \\ x < 7 \end{cases}$

C.E. $\quad 6 < x < 7$

$x - 6 > \frac{1}{2}$

$x > \frac{13}{2}$

Intersecando con le C.E. : $\qquad \frac{13}{2} < x < 7 \qquad \left(\frac{13}{2} ; 7 \right)$