17/9/2021

739 $2\sqrt{x+5} - \sqrt{2x+1} = \sqrt{3x-3}$ [4]

$$2\sqrt{x+5} = \sqrt{3x-3} + \sqrt{2x+1}$$

$$4(x+5) = 3x-3+2x+1+2\sqrt{(3x-3)(2x+1)}$$

$$4x+20-5x+2 = 2\sqrt{6x^2+3x-6x-3}$$

$$22-x = 2\sqrt{6x^2-3x-3}$$

$$(22-x)^2 = 4(6x^2-3x-3)$$

$$484+x^2-44x = 24x^2-12x-12$$

$$23x^2+32x-496=0 \qquad \frac{\Delta}{4} = 256+11408 =$$

$$= 11664 = 108^2$$

$$x = \frac{-16 \pm 108}{23} = \begin{cases} -\frac{124}{23} \\ \frac{92}{23} = 4 \end{cases}$$

CONTROLLO

1) $x = -\frac{124}{23}$ $\quad 2\sqrt{\underbrace{-\frac{124}{23}+5}_{<0}} - \sqrt{\dots}$

NON ACC.

2) $x=4$ $\quad 2\sqrt{4+5} - \sqrt{8+1} = \sqrt{12-3}$

$$6-3=3 \quad \text{OK}$$

$\boxed{x=4}$

743

$$\frac{2}{\sqrt{4x+5}} = \frac{9}{\sqrt{4x^2+x-5}} - \frac{1}{\sqrt{x-1}}$$

C.E.

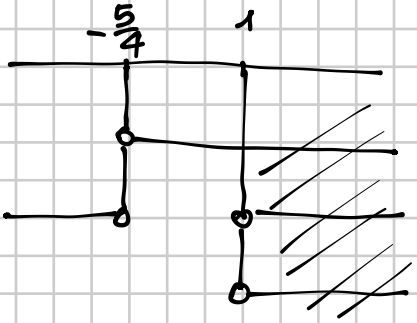
$$\begin{cases} 4x+5>0 \\ 4x^2+x-5>0 \\ x-1>0 \end{cases}$$

$$\begin{cases} x > -\frac{5}{4} \\ x < -\frac{5}{4} \vee x > 1 \\ x > 1 \end{cases} \Rightarrow \boxed{x>1}$$

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

$\Delta = 1+80 = 81$

$x = \frac{-1 \pm 9}{8} = \begin{cases} -\frac{5}{4} \\ 1 \end{cases}$



$4x^2+x-5 = 4\left(x+\frac{5}{4}\right)(x-1) = (4x+5)(x-1)$

$$\frac{2}{\sqrt{4x+5}} = \frac{9}{\sqrt{(4x+5)(x-1)}} - \frac{1}{\sqrt{x-1}}$$

$$\frac{2\sqrt{x-1}}{\sqrt{(4x+5)(x-1)}} = \frac{9-\sqrt{4x+5}}{\sqrt{(4x+5)(x-1)}}$$

$$4(x-1) = 81+4x+5-18\sqrt{4x+5}$$

$$4x-4 = 86+4x-18\sqrt{4x+5}$$

$$18\sqrt{4x+5} = 90 \qquad \sqrt{4x+5} = 5$$

$4x+5 = 25 \qquad 4x = 20 \qquad x = 5$ ← soddisfa la C.E.

CONTROLLO:

$$\frac{2}{\sqrt{25}} = \frac{9}{\sqrt{100}} - \frac{1}{\sqrt{4}} \qquad \frac{2}{5} \stackrel{?}{=} \frac{9}{10} - \frac{1}{2} \qquad \frac{2}{5} = \frac{4}{10} \text{ ok}$$

$\boxed{x=5}$

DISEQUAZIONI IRRAZIONALI

$\sqrt{A(x)} < B(x)$ $\qquad$ $\sqrt{A(x)} > B(x)$

DISEQ. DEL TIPO

$$\sqrt{A(x)} < B(x)$$

$$\begin{cases} A(x) \geq 0 \\ B(x) > 0 \\ A(x) < B^2(x) \end{cases}$$

770 $\sqrt{25 - x^2} < x + 1$

$$\begin{cases} 25 - x^2 \geq 0 \\ x + 1 > 0 \\ 25 - x^2 < (x+1)^2 \end{cases} \qquad \begin{cases} x^2 \leq 25 \\ x > -1 \\ 25 - x^2 < x^2 + 1 + 2x \end{cases}$$

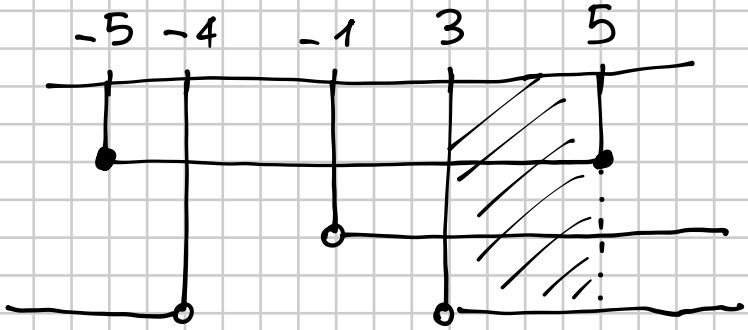
$$\begin{cases} -5 \leq x \leq 5 \\ x > -1 \\ -2x^2 - 2x + 24 < 0 \end{cases}$$

$x^2 + x - 12 > 0$

$(x+4)(x-3) > 0 \qquad x_1 = -4 \quad x_2 = 3$

$x < -4 \vee x > 3$

$$\begin{cases} -5 \leq x \leq 5 \\ x > -1 \\ x < -4 \vee x > 3 \end{cases}$$



$3 < x \leq 5$