N°4

EQ. 2° FRATTE PARAMETRICHE

3/11/2010

4a) $\dfrac{x}{x-1} - \dfrac{2}{x+1} = -\dfrac{8}{1-x^2}$

CONDIZIONI $x \neq \pm 1$ c.d. (x^2-1)

$$x(x+1) - 2(x-1) = 8$$

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

$$x^2 - x - 6 = 0$$

$$x_{1,2} = \frac{1 \pm \sqrt{1+24}}{2} = \begin{matrix} \nearrow 3 \\ \searrow -2 \end{matrix}$$

4b) $\dfrac{1}{x+a+b} - \dfrac{1}{x} = \dfrac{1}{a} + \dfrac{1}{b}$

CONDIZIONI
$a \neq 0 \quad b \neq 0$
$x \neq 0 \quad x \neq -(a+b)$
c.d. $= abx(x+a+b)$

$$abx - ab(x+a+b) = bx(x+a+b) + ax(x+a+b)$$

$$\cancel{abx} - \cancel{abx} - a^2b - ab^2 - bx^2 - abx - b^2x - ax^2 - a^2x - abx = 0$$

$$-(a+b)x^2 - x(ab + b^2 + a^2 + ab) - ab(a+b) = 0$$

$$(a+b)x^2 - (a+b)^2x - ab(a+b) = 0$$

$$x^2 - (a+b)x - ab = 0$$

$$x_{1,2} = \frac{a+b \pm \sqrt{(a+b)^2 - 4ab}}{2}$$

$$= \frac{a+b \pm \sqrt{(a-b)^2}}{2} = \begin{matrix} \nearrow \dfrac{a+b+a-b}{2} = a \\ \searrow \dfrac{a+b-a+b}{2} = b \end{matrix}$$

$$x_{1,2} = \begin{matrix} a \\ b \end{matrix}$$

purché $x \neq -(a+b)$

perciò $\begin{cases} a \neq -a-b \Rightarrow a \neq -\dfrac{b}{2} \\ b \neq -a-b \Rightarrow a \neq -2b \end{cases}$