

Equazioni parametriche fratte svolte (parzialmente)

Delle seguenti equazioni:

1. determinare il campo di esistenza (C.E.)
2. fattorizzare a denominatore comune
3. discutere per quali valori del parametro si annulla il coefficiente della incognita x del numeratore
4. determinare il valore della radice x in funzione del parametro
5. discutere come diventa l'equazione quando il valore della radice appartiene al C.E.

$$\frac{4c+4}{-7c+x-3} = \frac{4-2c}{-6c+x-1}$$

se $c=0 \rightarrow \frac{4}{x-3} = \frac{4}{x-1}$

Se $c=-2 \rightarrow -\frac{8}{x+11} = \frac{8}{x+11}$

Se $c=-1 \rightarrow 0 = \frac{6}{x+5}$

Se $c=2 \rightarrow \frac{12}{x-17} = 0$

diversamente $x = \frac{19c^2 + 3c - 4}{3c}$

$$\frac{5a+4}{a+x-2} = \frac{6a+3}{a+x-4}$$

Se $a=1 \rightarrow \frac{9}{x-1} = \frac{9}{x-3}$

se $a=-\frac{4}{5} \rightarrow 0 = -\frac{8}{5(x-\frac{24}{5})}$

se $a=-\frac{1}{2} \rightarrow \frac{3}{2(x-\frac{5}{2})} = 0$

diversamente $x = \frac{-a^2 - 7a - 10}{a-1}$

$$\frac{5c+4}{x-3} = \frac{6c+4}{-8c+x-3}$$

Se $c=0 \rightarrow \text{True}$

se $c=-\frac{4}{5} \rightarrow 0 = -\frac{4}{5(x+\frac{17}{5})}$

se $c=-\frac{2}{3} \rightarrow \frac{2}{3(x-3)} = 0$

se $c=0 \rightarrow \text{True}$

diversamente $x = -40c - 29$

$$\frac{3k-3}{2k+x-1} = \frac{3-2k}{k+x-2}$$

se $k=-1 \rightarrow -\frac{6}{x-3} = \frac{5}{x-3}$

se $k=1 \rightarrow 0 = \frac{1}{x-1}$

se $k=\frac{6}{5} \rightarrow \frac{3}{5(x+\frac{7}{5})} = \frac{3}{5(x-\frac{4}{5})}$

se $k=\frac{3}{2} \rightarrow \frac{3}{2(x+2)} = 0$

diversamente $x = \frac{-7k^2 + 17k - 9}{5k-6}$

$$\frac{3h+5}{-7h+x-2} = \frac{2h+4}{-4h+x-1}$$

se $h=-2 \rightarrow -\frac{1}{x+12} = 0$

se $h=-\frac{5}{3} \rightarrow 0 = \frac{2}{3(x+\frac{17}{3})}$

se $h=-1 \rightarrow \frac{2}{x+5} = \frac{2}{x+3}$

se $h=-\frac{1}{3} \rightarrow \frac{1}{x+\frac{1}{3}} = \frac{10}{3(x+\frac{1}{3})}$

diversamente $x = \frac{-2h^2 - 9h - 3}{h+1}$

$$\frac{x}{(x+1)(x-4c)} = \frac{1}{-7c+x-2}$$

se $c=-1 \rightarrow \frac{x}{(x+1)(x+4)} = \frac{1}{x+5}$

se $c=-\frac{2}{3} \rightarrow \frac{x}{(x+1)(x+\frac{8}{3})} = \frac{1}{x+\frac{8}{3}}$

se $c=-\frac{3}{7} \rightarrow \frac{x}{(x+1)(x+\frac{12}{7})} = \frac{1}{x+1}$

se $c=0 \rightarrow \frac{x}{x+1} = \frac{1}{x-2}$

diversamente $x = \frac{4c}{3(c+1)}$

$$\frac{2x}{(x-b)(2x+1)} = \frac{1}{-3b+x-1}$$

$$\frac{4xb-b+3x}{(b-x)(3b-x+1)(2x+1)} = 0$$

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

$$x = \frac{b}{4b+3}$$

$$\text{se } b = -\frac{3}{4} \rightarrow \frac{2x}{\left(x+\frac{3}{4}\right)(2x+1)} = \frac{1}{x+\frac{5}{4}}$$

$$\text{se } b = -\frac{3}{5} \rightarrow \frac{2x}{\left(x+\frac{3}{5}\right)(2x+1)} = \frac{1}{x+\frac{4}{5}}$$

$$\text{se } b = -\frac{1}{2} \rightarrow \frac{2x}{\left(x+\frac{1}{2}\right)(2x+1)} = \frac{1}{x+\frac{1}{2}}$$

$$\text{se } b = 0 \rightarrow \frac{2}{2x+1} = \frac{1}{x-1}$$

$$\frac{x}{(x+1)(x-5a)} = \frac{1}{2a+x-3}$$

$$\frac{7xa+5a-4x}{(x+1)(x-5a)(2a+x-3)} = 0$$

$$5a+(7a-4)x=0$$

$$x = -\frac{5a}{7a-4}$$

$$\text{se } a = 0 \rightarrow \frac{1}{x+1} = \frac{1}{x-3}$$

$$\text{se } a = \frac{3}{7} \rightarrow \frac{1}{\left(x-\frac{15}{7}\right)(x+1)} = \frac{1}{x-\frac{15}{7}}$$

$$\text{se } a = \frac{4}{7} \rightarrow \frac{1}{\left(x-\frac{20}{7}\right)(x+1)} = \frac{1}{x-\frac{13}{7}}$$

$$\text{se } a = 2 \rightarrow \frac{1}{(x-10)(x+1)} = \frac{1}{x+1}$$

$$\frac{x}{(x-7)(x-b)} = \frac{1}{b+x-1}$$

$$\frac{2xb-7b+6x}{(x-7)(x-b)(b+x-1)} = 0$$

$$2(b+3)x-7b=0$$

$$x = \frac{7b}{2(b+3)}$$

$$\text{se } b = -6 \rightarrow \frac{x}{(x-7)(x+6)} = \frac{1}{x-7}$$

$$\text{se } b = -3 \rightarrow \frac{x}{(x-7)(x+3)} = \frac{1}{x-4}$$

$$\text{se } b = 0 \rightarrow \frac{1}{x-7} = \frac{1}{x-1}$$

$$\text{se } b = \frac{1}{2} \rightarrow \frac{1}{(x-7)\left(x-\frac{1}{2}\right)} = \frac{1}{x-\frac{1}{2}}$$

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

$$\frac{b(x-10)}{(x-2)(x-5b)(-4b+x-2)} = 0$$

$$bx-10b=0$$

$$x=10$$

$$\text{se } b = \{2\} \rightarrow \left\{ \frac{x}{(x-10)(x-2)} \right\} = \left\{ \frac{1}{x-10} \right\}$$

$$\text{se } b = \{0\} \rightarrow \text{True}$$

$$\frac{x}{(x+2)(x-a)} = \frac{1}{-6a+x-1}$$

$$\frac{5xa-2a+3x}{(a-x)(6a-x+1)(x+2)} = 0$$

$$2a-(5a+3)x=0$$

$$x = \frac{2a}{5a+3}$$

$$\text{se } a = -\frac{3}{5} \rightarrow \frac{x}{\left(x+\frac{3}{5}\right)(x+2)} = \frac{1}{x+\frac{13}{5}}$$

$$\text{se } a = -\frac{1}{2} \rightarrow \frac{x}{\left(x+\frac{1}{2}\right)(x+2)} = \frac{1}{x+2}$$

$$\text{se } a = -\frac{1}{5} \rightarrow \frac{x}{\left(x+\frac{1}{5}\right)(x+2)} = \frac{1}{x+\frac{1}{5}}$$

$$\text{se } a = 0 \rightarrow \frac{1}{x+2} = \frac{1}{x-1}$$

$$\frac{x}{(x+1)(x-3b)} = \frac{1}{-2b+x-1}$$

$$\frac{xb+3b-2x}{(x+1)(x-3b)(-2b+x-1)} = 0$$

$$3b+(b-2)x=0$$

$$x = -\frac{3b}{b-2}$$

$$\text{se } b = -1 \rightarrow \frac{x}{(x+1)(x+3)} = \frac{1}{x+1}$$

$$\text{se } b = 0 \rightarrow \frac{1}{x+1} = \frac{1}{x-1}$$

$$\text{se } b = 1 \rightarrow \frac{1}{(x-3)(x+1)} = \frac{1}{x-3}$$

$$\text{se } b = 2 \rightarrow \frac{1}{(x-6)(x+1)} = \frac{1}{x-5}$$

$$\frac{x}{(x-2)(x-3b)} = \frac{1}{-2b+x-2}$$

$$\frac{b(x-6)}{(x-2)(x-3b)(-2b+x-2)} = 0$$

$$bx - 6b = 0$$

$$x = 6$$

$$\text{se } b = \{2\} \rightarrow \left\{ \frac{x}{(x-6)(x-2)} \right\} = \left\{ \frac{1}{x-6} \right\}$$

$$\text{se } b = \{0\} \rightarrow \text{True}$$

$$\frac{x}{(x-7)(x-2b)} = \frac{1}{-5b+x-4}$$

$$\frac{3xb+14b-3x}{(2b-x)(5b-x+4)(x-7)} = 0$$

$$-14b - 3(b-1)x = 0$$

$$x = -\frac{14b}{3(b-1)}$$

$$\text{se } b = -\frac{4}{3} \rightarrow \frac{x}{(x-7)\left(x+\frac{8}{3}\right)} = \frac{1}{x+\frac{8}{3}}$$

$$\text{se } b = 0 \rightarrow \frac{1}{x-7} = \frac{1}{x-4}$$

$$\text{se } b = \frac{3}{5} \rightarrow \frac{x}{(x-7)\left(x-\frac{6}{5}\right)} = \frac{1}{x-7}$$

$$\text{se } b = 1 \rightarrow \frac{x}{(x-7)(x-2)} = \frac{1}{x-9}$$

$$\frac{x}{(x-3)(x-k)} = \frac{1}{-5k+x-4}$$

$$\frac{4xk+3k+x}{(k-x)(5k-x+4)(x-3)} = 0$$

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

$$x = -\frac{3k}{4k+1}$$

$$\text{se } k = -1 \rightarrow \frac{x}{(x-3)(x+1)} = \frac{1}{x+1}$$

$$\text{se } k = -\frac{1}{4} \rightarrow \frac{x}{(x-3)\left(x+\frac{1}{4}\right)} = \frac{1}{x-\frac{11}{4}}$$

$$\text{se } k = -\frac{1}{5} \rightarrow \frac{x}{(x-3)\left(x+\frac{1}{5}\right)} = \frac{1}{x-3}$$

$$\text{se } k = 0 \rightarrow \frac{1}{x-3} = \frac{1}{x-4}$$

$$\frac{4b+5}{x-2} = \frac{3b+4}{-b+x-1}$$

$$\text{se } b = -\frac{4}{3} \rightarrow -\frac{1}{3(x-2)} = 0$$

$$\text{se } b = -\frac{5}{4} \rightarrow 0 = \frac{1}{4\left(x+\frac{1}{4}\right)}$$

$$\text{se } b = -1 \rightarrow \frac{1}{x-2} = \frac{1}{\frac{x}{9}}$$

$$\text{se } b = 1 \rightarrow \frac{1}{x-2} = \frac{1}{x-2}$$

$$x = \frac{4b^2+3b-3}{b+1}$$

$$\frac{2c+5}{x-2} = \frac{-c-4}{c+x-1}$$

$$\text{se } c = -4 \rightarrow -\frac{3}{x-2} = 0$$

$$\text{se } c = -3 \rightarrow -\frac{1}{x-2} = -\frac{1}{x-4}$$

$$\text{se } c = -\frac{5}{2} \rightarrow 0 = -\frac{1}{2\left(x-\frac{7}{2}\right)}$$

$$\text{se } c = -1 \rightarrow \frac{3}{x-2} = -\frac{3}{x-2}$$

$$x = \frac{-2c^2 - c + 13}{3(c+3)}$$

$$\frac{5a+4}{a+x-3} = \frac{2a-1}{x-4}$$

$$\text{se } a = -\frac{4}{3} \rightarrow -\frac{13}{3\left(x-\frac{14}{3}\right)} = -\frac{13}{3(x-4)}$$

$$\text{se } a = -1 \rightarrow -\frac{1}{x-4} = -\frac{3}{x-4}$$

$$\text{se } a = -\frac{4}{5} \rightarrow 0 = -\frac{13}{5(x-4)}$$

$$\text{se } a = \frac{1}{2} \rightarrow \frac{13}{2\left(x-\frac{5}{2}\right)} = 0$$

$$x = \frac{2a^2 + 13a + 19}{3a+5}$$