Operazioni con le frazioni algebriche

indica per quali valori le seguenti frazioni algebriche perdono di significato

1	$\frac{1}{x}$	$x=0$	$\frac{2}{y^3}$	$y=0$	$\frac{5}{x^2y^3}$	$x=0$ $y=0$
2	$\frac{3x}{ab}$	$a=0$ $b=0$	$\frac{4a}{3b}$	$b=0$	$\frac{2ab}{7x^9}$	$x=0$
3	$\frac{11xab}{3xy^2z^4}$	$x=0$ $y=0$ $z=0$	$\frac{3}{x-1}$	$x=1$	$\frac{2x}{x+1}$	$x=1$
4	$\frac{a^3b^2}{a^2-4}$	$a=\pm 2$	$\frac{5a^2}{y^2+4}$	$\nexists y$	$\frac{7x}{x+7}$	$x=-7$
5	$\frac{5xy}{xy-1}$	$xy=1$	$\frac{z-2}{z+2}$	$z=-2$	$\frac{8x-1}{x-8}$	$x=8$
6	$\frac{5a+b}{a+b}$	$a=-b$	$\frac{7a}{a^2+b^2}$	$a=0$ $e\ b=0$	$\frac{x+y}{x-y}$	$x=y$
7	$\frac{7}{m^2-49n^2}$	$m=\pm 7n$	$\frac{8}{x^3-8y^3}$	$x=2y$	$\frac{6a}{a^2x-5ax+6x}$	$a=-2$ $a=-3$ $x=0$
8	$\frac{x^2-4}{x^2-9x+8}$	$x=-8$ $x=-1$	$\frac{7x^2-1}{x^2-9x+14}$	$x=-2$ $x=-7$	$\frac{x+2}{a^2-2ax+x^2}$	$a=1$
9	$\frac{x^2+3}{x^2-9}$	$x=\pm 3$	$\frac{a^3+8}{a+8}$	$a=-8$	$\frac{a(a+7)}{a^2-6a-7}$	$a=-1$ $a=+7$

indica per quali valori le seguenti frazioni algebriche si annullano

10	$\frac{2}{4x+10}$	$\nexists\ x$	$\frac{3x}{9y}$	$x=0$ *con* $y\neq 0$
11	$\frac{11a}{7a+11}$	$a=0$	$\frac{11}{11a-7}$	$\nexists a$
12	$\frac{2x-4}{10x-12}$	$x=2$	$\frac{3a+3b-3c}{12}$	$a+b-c=0$
13	$\frac{5a+ab}{5c}$	$a=0$ $b=-5$	$\frac{a+b}{a^2+b^2}$	$a=0$ *con* $b\neq 0$
14	$\frac{3m}{m^2+9m}$	$m=0$ *non accettabile*	$\frac{3x}{12a-3x}$	$x=0$ *con* $a\neq 0$
15	$\frac{5x}{15a-20b}$	$x=0$	$\frac{x^2-9}{3x-9}$	$x=3$ *non accettabile* $x=-3$,
16	$\frac{a^2+1}{a^2-1}$	$\nexists a$	$\frac{x^3-1}{x^2+1}$	$x=1$

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semplifica le frazioni algebriche dopo aver determinato le condizioni di esistenza			
17	$\frac{3x}{9x^2}$	$x \neq 0$	$\frac{1}{x}$
18	$\frac{8a^3b}{10a^4b^4}$	$a \neq 0$ $b \neq 0$	$\frac{4b}{5ab^3}$
19	$\frac{7x}{14xy - 21x}$	$x \neq 0$ $y \neq 3/2$	$\frac{1}{2y - 3}$
20	$\frac{5a^3 - 10a^2}{5a^3}$	$a \neq 0$	$\frac{a-2}{a}$
21	$\frac{2x^2 - 8}{x^3 - x^2 - 4x + 4}$	$x \neq \pm 2$	$\frac{2}{x-1}$
22	$\frac{1 - a^2}{a + b - a^2 - ab}$	$a \neq 1$ $a \neq -b$	$\frac{1+a}{a+b}$
23	$\frac{x^3 - ax^2}{x^4 - 2ax^3 + a^2x^2}$	$x \neq 0$ $x \neq a$	$\frac{x+a}{(x-a)^2}$
24	$\frac{4 - 9m^2}{4 - 6m + 2m^2 - 3m^3}$	$m \neq \frac{3}{2}$	$\frac{3m+2}{m^2+2}$
25	$\frac{a^2 - 4a + 4}{a^2 - 4}$	$a \neq \pm 2$	$\frac{a+2}{a-2}$
26	$\frac{3t^2 - 3}{6t^2 - 6}$	$t \neq \pm 1$	$\frac{1}{2}$
27	$\frac{3x + 3y}{4x + 4y + by + bx}$	$x \neq y$ $b \neq 4$	$\frac{3}{4+b}$
28	$\frac{x^2 - 5x + 6}{x^2 - 9}$	$x \neq \pm 3$	$\frac{x-2}{x+2}$

esegui le somme algebriche dopo aver determinato le condizioni di esistenza				
29	$3 + \frac{1}{x}$	$\frac{a}{x} - \frac{b}{2y}$	$\frac{3x+1}{x}$	$\frac{2ay - bx}{2xy}$
30	$\frac{2}{a} - 3x$	$x + 1 + \frac{1}{x-1}$	$\frac{2 - 3ax}{a}$	$\frac{x^2}{x-1}$
31	$\frac{3}{2ab} + \frac{b}{6a^2} - \frac{a}{9b^2}$	$3 + \frac{1}{a} - \frac{a^2 + a + 1}{a+1}$	$\frac{27ab + 3b^3 - 2a^3}{18a^2b^2}$	$\frac{2a + 4 - a^2}{a+1}$
32	$\frac{a+1}{a} - \frac{1}{1-a}$	$\frac{a+2}{a^2-9} + \frac{3}{a}$	$\frac{a^2}{a(a-1)}$	$\frac{4a^2 + 2a - 27}{a(a^2-9)}$
33	$\frac{2-y}{x-y} - \frac{1}{y}$	$\frac{2x - 3y}{x-y} - \frac{2x-3y}{x-y}$	$\frac{3y - y^2 - x}{y(x-y)}$	0

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34	$\frac{x-1}{x^2-y^2}-\frac{y-1}{xy-y^2}$	$\frac{a}{a+2}-\frac{a-3}{a^2-4}$	$\frac{x-y^2}{y(x^2-y^2)}$	$\frac{a^2-3a+3}{a^2-4}$
35	$\frac{2x+3y}{x-y}+\frac{x+2y}{y-x}$	$\frac{2x-3y}{x-y}-\frac{2x-3y}{y-x}$	$\frac{x+y}{x-y}$	$\frac{4x-6y}{x-y}$
36	$\frac{2x-3y}{x-y}-\frac{2x-3y}{x+y}$	$\frac{2a+3b}{a+2b}+\frac{2a-3b}{a+2b}$	$\frac{4x^2-6xy}{x^2-y^2}$	$\frac{3a}{a+2b}$
37	$\frac{1}{a+1}+\frac{1}{a-1}-\frac{1}{a}$	$a+\frac{1}{a-1}+\frac{1}{1-a}$	$\frac{a^2+1}{a^3-a}$	a
38	$\frac{1}{m^2-3m+2}+\frac{1}{m-2}-\frac{1}{1-m}$	$a+\frac{1}{a-1}-\frac{1}{1-a}$	$\frac{2}{m-2}$	$\frac{a^2-a+2}{a-1}$
39	$\frac{5a-2}{a}-\frac{5a}{5a+2}-1$	$\frac{2m-n}{m-n}+\frac{n-3m}{2m-n}-\frac{n^2}{2m^2-3mn+n^2}$	$\frac{15a^2-2a-4}{a(5a+2)}$	$\frac{m+n}{2m-n}$

esegui le moltiplicazioni e le potenze dopo aver determinato le condizioni di esistenza

40	$\frac{ab}{7c}\cdot\frac{c}{b^2}$	$3\cdot\frac{mn}{6a}$	$\frac{a}{7b}$	$\frac{mn}{2a}$
41	$\left(\frac{1-2x}{1-4x^2}\right)^2$	$\left(-\frac{3}{2}\cdot\frac{a^3b}{c^2}\right)^3$	$\frac{1}{(1+2x)^2}$	$-\frac{27a^9b^3}{8c^6}$
42	$\frac{a^2-a}{a+1}\cdot\frac{4a+4}{a^2-1}$	$(x+1)\cdot\frac{x-1}{3x^2+2x-1}$	$\frac{4}{a+1}$	$\frac{x-1}{3x-1}$
43	$\frac{a^2-9}{2a-4}\cdot\frac{a^2-4}{3a+9}$	$\frac{a^2+ab}{x^2-xy}\cdot\frac{x^2-y^2}{a^2-b^2}\cdot\frac{ax-xb}{5x+5y}$	$\frac{(a+2)(a-3)}{6}$	$\frac{a}{5}$