

condizioni di esistenza delle frazioni algebriche		
1	$\frac{(a^2 + 17)^3}{11a}$	$a \neq 0$
2	$\frac{3a}{2b + 8}$	$b \neq -4$
3	$\frac{2x^2}{2x + 3}$	$x \neq -\frac{3}{2}$
4	$\frac{2a + b}{a + 2b}$	$a \neq -2b$
5	$\frac{1}{(a - 1)(a + 5)}$	$a \neq 1 \wedge a \neq -5$
6	$\frac{3x + 5}{x^2 - 9}$	$x \neq -3 \wedge x \neq 3$
7	$\frac{3x}{x^2 + 1}$	$\forall x \in \mathbb{R}$
8	$\frac{b - 5}{b^5 - 27b^2}$	$b \neq 0 \wedge b \neq 3$
9	$\frac{3}{a^2 + a}$	$a \neq 0 \wedge a \neq -1$
10	$\frac{a}{bx + 3x}$	$x \neq 0 \wedge b \neq -3$
11	$\frac{3a + b}{2a^3 - 32a}$	$a \neq 0 \wedge a \neq -4 \wedge a \neq 4$
12	$\frac{3b + 1}{a^4 - 256}$	$a \neq -4 \wedge a \neq 4$
13	$\frac{x - 1}{x^2 - 6x + 9}$	$x \neq 3$
14	$\frac{7x - 1}{x^3 + 7x^2 - x - 7}$	$x \neq 1 \wedge x \neq -1 \wedge x \neq -7$
15	$\frac{b + 2}{(b^2 - 9)(b^3 - b^2)}$	$b \neq -3 \wedge b \neq 3 \wedge b \neq 0 \wedge b \neq 1$
16	$\frac{11}{(a - 1)^3}$	$a \neq 1$
17	$\frac{13a - b}{a^4 - b^4}$	$a \neq b \wedge a \neq -b$
18	$\frac{x^2y + 1}{x^2 - 4y^2}$	$x \neq -2y \wedge x \neq 2y$
19	$\frac{2a^2 + 8a}{(a + 7)(3x - 2)}$	$a \neq -7 \wedge x \neq \frac{2}{3}$
20	$\frac{x + 3}{-x^2 - 4}$	$\forall x \in \mathbb{R}$

semplificazioni di frazioni algebriche		
21	$\frac{7a^4b^5}{21a^3b}$	$\frac{1}{3}ab^4$
22	$\frac{a^2 - 4a + 4}{3a^2 - 12}$	$\frac{a - 2}{3(a + 2)}$
23	$\frac{6xy + 3y^2}{8xy + 4y^2}$	$\frac{3}{4}$
24	$\frac{x^2 + 2xy}{xy + 2y^2}$	$\frac{x}{y}$
25	$\frac{a^2b^2 + abx}{a^2b^2}$	$\frac{ab + x}{ab}$
26	$\frac{3x - 3y}{y - x}$	-3
27	$\frac{x^3 + 3x^2}{x + 3}$	x^2
28	$\frac{x^2 + 5x}{5x}$	$\frac{x + 5}{5}$
29	$\frac{a^2 - 3a}{9 - 3a}$	$-\frac{a}{3}$
30	$\frac{bx + ax - by - ay}{by + ay + bx + ax}$	$\frac{x - y}{x + y}$
31	$\frac{9by - 6ax - 3bx + 18ay}{3b + 6a}$	$3y - x$
32	$\frac{6a^2 - 12a + 6}{a^2 - 1}$	$\frac{6(a - 1)}{a + 1}$
33	$\frac{a^3 - b^3}{a^3b^3}$	<i>non semplificabile</i>
34	$\frac{x^2 - 5x + 6}{3x - 9}$	$\frac{x - 2}{3}$
35	$\frac{16x^3 + 8x}{4x^2 + 1}$	<i>non semplificabile</i>
36	$\frac{4a - 4b + (a - b)^2}{(a - b)^2}$	$\frac{4 + a - b}{a - b}$
37	$\frac{x^4 - 1}{x^3 - 1}$	$\frac{(x + 1)(x^2 + 1)}{x^2 + x + 1}$
38	$\frac{bx + 2x - b - 2}{bx - 2x - b + 2}$	$\frac{b + 2}{b - 2}$

39	$\frac{a^3 + 4a^2 + 4a}{4 - a^2}$	$\frac{a(a + 2)}{2 - a}$
40	$\frac{a^2b - 4b}{-2b - ab}$	$2 - a$
41	$\frac{x^3 - y^3}{3x - 3y}$	$\frac{x^2 + xy + y^2}{3}$
42	$\frac{(a - 2)^2 + 2a}{2(a^3 + 8)}$	$\frac{1}{2(a + 2)}$
43	$\frac{x^2 - 4}{x^2 - 4x + 4}$	$\frac{x + 2}{x - 2}$
44	$\frac{a^2 - 2a - 3}{a^2 - 6a + 9}$	$\frac{a + 1}{a - 3}$
45	$\frac{2ab - a^2 - b^2}{a^3 - a^2b}$	$\frac{b - a}{a^2}$
46	$\frac{x^3y^3 - xy}{x^2y^2 + 1 + 2xy}$	$\frac{xy(xy - 1)}{xy + 1}$
47	$\frac{4a^2 - 4ab + b^2 - 1}{4a^2 + b^2 + 1 - 4ab + 4a - 2b}$	$\frac{2a - b - 1}{2a - b + 1}$
48	$\frac{x^3 - y^3}{x^2 - 2xy + y^2}$	$\frac{x^2 + xy + y^2}{x - y}$
49	$\frac{x^3 - y^3}{x^2 - y^2}$	$\frac{x^2 + xy + y^2}{x + y}$
50	$\frac{a^3 - 2a^2 + a}{a^3 - 3a^2 + 3a - 1}$	$\frac{a}{a - 1}$
51	$\frac{x^2 - 3x + 2}{x^2 - x - 2}$	$\frac{x - 1}{x + 1}$
52	$\frac{a^2 + 10ab + 25b^2}{a^4 + 10a^3b + 25a^2b^2}$	$\frac{1}{a^2}$
53	$\frac{x^5 - 16x}{x^3 - 4x}$	$x^2 + 4$
54	$\frac{2a^2 + a - 10}{(a^2 - 4)(2a^2 + 5a)}$	$\frac{1}{a(a + 2)}$
55	$\frac{2a^3 + 2}{a^3 + a^2 + a + 1}$	$\frac{2(a^2 - a + 1)}{a^2 + 1}$
56	$\frac{8x^2 - 8}{4bx + 12x + 4b + 12}$	$\frac{2(x - 1)}{b + 3}$

57	$\frac{x^2 + y^2 - 2xy - z^2}{3x^2 - 3xy - 3xz}$	$\frac{x - y + z}{3x}$
58	$\frac{2a^2 + 2a - 12}{a^3 - 7a + 6}$	$\frac{2}{a - 1}$
59	$\frac{x^3 - 3x^2 + 4}{x^2 - x - 2}$	$x - 2$
60	$\frac{2x^5 + 6x^4 - 36x^3}{2ax^3 - x^3 - 18ax + 9x}$	$\frac{2x^2(x + 6)}{(2a - 1)(x + 3)}$
61	$\frac{a^2 + 2a + 1 - b^2}{a^2 + ab + a}$	$\frac{a + 1 - b}{a}$
62	$\frac{4a^2 - 25b^2}{50b^2 - 8a^2}$	$-\frac{1}{2}$
63	$\frac{9a^2 + 25b^2 - 30ab}{9a - 15b}$	$\frac{3a - 5b}{3}$
64	$\frac{x^4 + 1 - 2x^2}{2x + 1 + x^2}$	$(x - 1)^2$
65	$\frac{x^3 - xy^4}{3x^2 - 3xy^2}$	$\frac{x + y^2}{3}$
66	$\frac{3a^{n+2}b^{n+1}}{2a^n b}$	$\frac{3a^2b^n}{2}$
67	$\frac{4x^{2n} - 12x^n + 9}{4x^{2n} - 9}$	$\frac{2x^n - 3}{2x^n + 3}$
68	$\frac{a^{2n} - b^{2n}}{a^{2n} + 2a^n b^n + b^{2n}}$	$a^n \neq -b^n, \frac{a^n - b^n}{a^n + b^n}$
69	$\frac{2x^{n+1} + x^{n+2} + x^n}{x^2 - 1}$	$x \neq \pm 1, \frac{x^n(x + 1)}{x - 1}$
70	$\frac{24x^{2n} - 24}{8x^{4n} - 8}$	$x \neq \pm 1, \frac{3}{x^{2n} + 1}$

addizioni e sottrazioni di frazioni algebriche

71	$\frac{1}{6x} - \frac{2}{3x} + \frac{1}{2x}$	0
72	$\frac{1}{2x} - \frac{5}{3x} + \frac{3}{5x}$	$\frac{-17}{30x}$
73	$x - \frac{1}{2x} + \frac{3}{x^2}$	$\frac{2x^3 - x + 6}{2x^2}$
74	$\frac{y}{3x^2} - \frac{5}{2xy} + \frac{1}{6x}$	$\frac{xy + 2y^2 - 15x}{6x^2y}$

75	$\frac{2x^2 + 1}{x^2} - \frac{x + 2}{x} + 3$	$\frac{4x^2 - 2x + 1}{x^2}$
76	$\frac{2}{x^2y} + \frac{3y}{xy^2} - 1$	$\frac{2 + 3x - x^2y}{x^2y}$
77	$\frac{a + 2b}{2a} + \frac{a - b}{3a} - \frac{a + 4b}{6a}$	$\frac{2}{3}$
78	$\frac{2x - y}{3} - \frac{x - 2y}{4}$	$\frac{5x + 2y}{12}$
79	$1 - \frac{3x - 2y}{5x + 3y}$	$\frac{2x + 5y}{5x + 3y}$
80	$1 + \frac{xy - 2}{3xy} - \frac{2}{xy}$	$\frac{4xy - 8}{3xy}$
81	$\frac{11}{2a^2b^2} - 1 - \frac{3}{4a^2b^2}$	$\frac{19 - 4a^2b^2}{4a^2b^2}$
82	$\frac{x + y}{2x} - \frac{2x - y}{3y} - \frac{3y - x}{6x}$	$\frac{3y - 2x}{3y}$
83	$\frac{(x - y)(x + y)}{xy} + \frac{2y}{x} + 2 - \frac{(x + y)^2}{xy}$	0
84	$-3 - \frac{a - 1}{9 - 9a^2} + \frac{2}{3(a + 1)}$	$-\frac{27a + 20}{9(a + 1)}$
85	$\frac{5x^2 - xy}{x^2 - y^2} - \frac{3x}{y + x} + \frac{2x}{y - x}$	0
86	$\frac{(b - a)(b^2 + ab + a^2)}{2a^2b} - \frac{3b^2 + 4a^2}{6a^2} + \frac{1}{6}$	$-\frac{a + b}{2b}$
87	$\frac{1}{x - 2} - \frac{2}{x + 3} - \frac{5}{x^2 + x - 6}$	$-\frac{1}{x + 3}$
88	$\frac{x - y}{x + y} - \frac{1 - y^2}{x^2 + y^2 + 2xy}$	$\frac{x^2 - 1}{(x + y)^2}$
89	$\frac{2x}{x + 3} - \frac{3x}{2x + 4} - \frac{1}{x^2 + 5x + 6}$	$\frac{x^2 - x - 2}{2(x^2 + 5x + 6)}$
90	$-\frac{ax + ay}{bx^2 - by^2} + \frac{b}{ax - ay}$	$\frac{b^2 - a^2}{ab(x - y)}$
91	$\frac{a - 1}{a - 4} - \frac{a + 2}{a - 3} - \frac{3}{a^2 - 7a + 12}$	$\frac{2}{3 - a}$
92	$\frac{a - 4}{a^2 + 9 - 6a} - \frac{a + 3}{a^2 + a - 12}$	$\frac{-7}{(a - 3)^2(a + 4)}$
93	$\frac{3a}{a - b} - \frac{3(a + b)^2}{a^2 - ab} - \frac{3b}{a}$	$\frac{9b}{b - a}$
94	$\frac{a}{3a - 3b} + \frac{b}{2a - 2b} + \frac{a + 4b}{6b - 6a}$	$\frac{1}{6}$

95	$\frac{4x^2 + 4x + 1}{4x - 8x^2} - \frac{4x^2 + 1}{4x} + x$	$\frac{2x + 3}{2 - 4x}$
96	$\frac{x^2}{xy - y^2} - \frac{x^2 + y^2}{x^2 - y^2} - \frac{y^2}{xy + y^2}$	$\frac{x}{y}$
97	$\frac{x + 1}{xy^2} - \frac{x - 1}{x^2y} + \frac{x^2y - x^3 + x + y}{x^3y^2 - x^2y^2}$	$\frac{2}{xy(x - 1)}$
98	$\frac{x + 2}{x^2 + x} + \frac{x + 1}{-x^2 - 2x - 1} - \frac{1}{x}$	$\frac{1 - x}{x(x + 1)}$
99	$-\frac{-b^2}{3ab - 9a^2} + \frac{3a}{b + 3a} + \frac{b^2 + 9a^2}{b^2 - 9a^2}$	$\frac{b(b + 3a)}{3a(b - 3a)}$
100	$\frac{2 + a}{a + 3} - \frac{3a - 1}{a^2 + a - 6} - \frac{a}{a + 3}$	$\frac{1}{2 - a}$
101	$\frac{x^2 + 2x + 1}{x^2 - 2x + 1} + \frac{x - 1}{1 + x} - \frac{2x^3 + 6}{x^3 - x^2 - x + 1}$	$\frac{6}{x^2 - 1}$
102	$\frac{2a + 4}{a - 9} - \frac{3a^2 + 13a - 8}{a^2 - 2a - 63} + \frac{2a - 5}{a + 7}$	$\frac{a - 9}{a + 7}$
103	$\frac{1}{x + 5} - \frac{x^2 - 5x}{x^3 + 125} - \frac{5 - x}{x^2 - 5x + 25}$	$\frac{x^2}{x^3 + 125}$
104	$\frac{a - 2b}{a + b} - \frac{a + 2b}{a - b} + \frac{3ab}{a^2 - b^2}$	$-\frac{3ab}{a^2 - b^2}$
105	$\frac{a + 2}{a^2 + a - 2} - \frac{1}{a - 1} + \frac{a}{a + 2}$	$\frac{a}{a + 2}$
106	$\frac{x}{x^2 - 3x + 2} - \frac{x^2 - x}{x - 2} + 2x$	$\frac{x(x - 2)}{x - 1}$
107	$\frac{x + 1}{x^2 - xy} - \frac{y - 2}{xy - y^2} - \frac{3}{x - y}$	$\frac{3xy - y - 2x}{xy(y - x)}$
108	$\frac{1}{(x - 3)(x - 1)} - \frac{1}{x - 3} + \frac{2}{x^2 - 2x - 3}$	$-\frac{x}{x^2 - 1}$
109	$\frac{1}{(a - b)(a - x)} + \frac{1}{(b - a)(b - x)} + \frac{1}{(x - a)(x - b)}$	0
110	$\frac{a^2}{a^2 - b^2} + \frac{b^2}{b^2 - a^2} - \frac{ab - b^2}{2ab - a^2 - b^2}$	$\frac{a}{a - b}$
111	$\frac{1}{x^2 - 2x + 1} + x^2 + 2x + 1 + \frac{2x^2(x - 1)}{x^3 - 3x^2 + 3x - 1}$	$\frac{x^4 + 2}{(x - 1)^2}$
112	$\frac{2}{x + 2} + \frac{1}{-x - 2} + \frac{9x^2 - 3x}{3x^2 + 5x - 2}$	$\frac{3x + 1}{x + 2}$
113	$\frac{x}{x + 1} + \frac{x^2 - xy + 2x}{xy - x + y - 1} - \frac{y}{1 - y}$	$\frac{x + y}{y - 1}$
114	$\frac{x - 1}{(x - 2)^2 - (x - 3)^2} + \frac{3x - 6}{2x - 5} - \frac{6x - 15}{25 + 4x^2 - 20x}$	2

115	$-\frac{1}{x} + \frac{x^2 + 2y^2}{x^3 + y^3} + \frac{x + 2y}{x^2 + y^2 - xy} + \frac{y^2 - 4xy}{x^3 + xy^2 - x^2y}$	$\frac{1}{x + y}$
116	$\frac{3}{a^n - 2} + \frac{2}{a^n}$	$\frac{5a^n - 4}{a^{2n} - 2a^n}$
117	$\frac{x^{2n}}{x^{2n} + y^{2n}} + \frac{1}{2} + \frac{y^{2n}}{y^{2n} + x^{2n}}$	$\frac{3}{2}$
118	$\frac{1}{1 + a^n} + \frac{1}{1 - a^n} - \frac{2a^n}{1 - a^{2n}}$	$\frac{2}{1 + a^n}$
119	$\frac{a}{x^n + 1} - \frac{b}{x^n - 1} + \frac{bx^n - ax^n}{x^{2n} - 1}$	$\frac{a + b}{1 - x^{2n}}$
120	$\frac{a^n + 2}{a^{2n} + a^n} + \frac{a^n + 1}{-a^{2n} - 2a^n - 1} - \frac{1}{a^n}$	$\frac{1 - a^n}{a^n(1 + a^n)}$

moltiplicazioni e divisioni di frazioni algebriche

121	$\frac{6}{10x^3y^2} \cdot \frac{5x^2y}{3}$	$\frac{1}{xy}$
122	$-\frac{27b^3y^2}{3} \cdot \frac{2y}{45a^2x^2} \cdot \frac{3ax}{2by}$	$-\frac{3b^2y^2}{5ax}$
123	$\frac{a^2 - b^2}{a^2 + b^2} \cdot \frac{a^4 - b^4}{a + b}$	$(a + b)(a - b)^2$
124	$\frac{4y^2}{y^2 - x^2} \cdot \frac{x + y}{2y}$	$\frac{2y}{y - x}$
125	$\frac{a^2 + a + 1}{b^2} \cdot \frac{3b^3 - 3ab^3}{1 - a^3}$	$3b$
126	$\frac{x^3 - 8}{8 + x^3} \cdot \frac{x + 2}{4 + 2x + x^2}$	$\frac{x - 2}{4 - 2x + x^2}$
127	$\frac{x^2 - 2x - 3}{x^2 + 2x - 15} \cdot \frac{x^2 - 4x + 4}{x + 2} \cdot \frac{x^2 + 7x + 10}{x^2 - x - 2}$	$x - 2$
128	$\frac{2a}{1 - 4a^2} \cdot \frac{4a^2 + 4a + 1}{2a - 6}$	$\frac{a(1 + 2a)}{(1 - 2a)(a - 3)}$
129	$\frac{x^2 - 1}{x} \cdot \frac{x + 2}{x} \cdot \frac{x^2}{x^2 + 3x + 2}$	$x - 1$
130	$\frac{a^2 + a}{a + 3} \cdot \frac{a^2 + 6a + 9}{2a + 6} \cdot \frac{1}{a^2 + a}$	$\frac{1}{2}$
131	$\frac{x^2 + y^2 - xy}{x^2y^2} \cdot \frac{x^3y^2}{x^3 + y^3}$	$\frac{x}{x + y}$
132	$\frac{a^2 + 2ab + b^2}{b^2} \cdot \frac{b^3}{a^3 + 3a^2b + 3ab^2 + b^3}$	$\frac{b}{a + b}$
133	$\frac{4(x + 3) + x - 3}{x^2(x - 3)(x + 3)} \cdot \frac{-9x^2 + x^4}{25x^2 - 81}$	$\frac{1}{5x - 9}$

134	$\frac{10a^2 - 10b^2}{x^2 - xy} \cdot \frac{x^2 - 2xy + y^2}{2a^2 - 4ab + 2b^2}$	$\frac{5(a+b)(x-y)}{x(a-b)}$
135	$(7a^n b^{n+2}) \cdot \frac{3}{14a^{n+1}b^2} \cdot \left(-\frac{6b^n}{a}\right)$	$-\frac{9b^{2n}}{a^2}$
136	$\frac{5x - 5y}{3xy} : \frac{x^2}{x - y}$	$\frac{5(x-y)^2}{3x^3y}$
137	$\frac{x^0}{y^0} : \frac{x}{y}$	$\frac{y}{x}$
138	$10a^3b^3 : \left(-\frac{5b^4}{a^3}\right)$	$-\frac{2a^6}{b}$
139	$\frac{2a^2 + 4ab + 2b^2}{3a^2b} : \frac{4b^2 - 4a^2}{9ab^2}$	$\frac{3b(a+b)}{2a(b-a)}$
140	$\frac{4a^3b^2}{15xy} : \left(\frac{16a^4b^4}{35x^3b^2} : \frac{8a^2b^2}{49xy}\right)$	$\frac{2xab^2}{21y^2}$
141	$\frac{2x - 3y}{x^2 - y^2} : \left(\frac{9y^2 + 4x^2 - 12xy}{x^3 + xy^2 - 2x^2y} : \frac{2x^2 - 3xy}{x^3 - x^2y}\right)$	$\frac{1}{x+y}$
142	$\frac{3y}{y-5} : \left(\frac{y-1}{2y-10} : \frac{6y}{y^2-1}\right)$	$\frac{36y^2}{(y-1)^2(y+1)}$
143	$\frac{x^3 - xy^2}{x^2 + 2xy + y^2} : \left(\frac{x^2 - 2xy + y^2}{x^2y - y^3} : xy\right)$	x^2y^2
144	$\frac{4x^2y^3}{5x-5} : \left(\frac{8x^5y^3}{10x-10} : \frac{y}{x^4}\right)$	$\frac{y}{x^7}$
145	$\frac{2a^3}{a+b} : \left(\frac{4ab}{a^2 + 2ab + b^2} : \frac{a^2 - b^2}{ab - b^2}\right)$	$\frac{a^2(a+b)^2}{2b^2}$
146	$\frac{4(x+2) - 5 - 5x}{(x+1)(x+2)} : \frac{-x+3}{x^2 + 3x + 2}$	1
147	$\left[\left(\frac{y^2 - x^2}{x^2y^2}\right) : \left(\frac{y-x}{xy}\right)\right] : \frac{x+y}{xy}$	1
148	$\frac{a^2 - 3a}{a^2 - 1} : \frac{9a + 3a(a-1) - 2a(a+1)}{3(a-1)(a+1)}$	$\frac{3(a^2 - 3)}{a+4}$
149	$\frac{-x^2 + y}{xy} : \frac{2xy - (y + 2xy - x^2)}{2xy} : \left(-\frac{1}{x}\right)$	2x
150	$\frac{-(x-3y) + x + y}{x+y} : \frac{-3(x-y) + 3x + y}{x-y}$	$\frac{x-y}{x+y}$
151	$\frac{2a - 3b}{a^2 - b^2} : \frac{4a^2 - 6ab}{3a - 3b} \cdot \frac{a^2 + ab}{3}$	$\frac{1}{2}$
152	$\frac{x^3 + y^3}{x^2 - y^2} : \frac{x^2 - xy + y^2}{x^2 - 2xy + y^2} \cdot \frac{x-y}{3x}$	$\frac{(x-y)^2}{3x}$

153	$\frac{2x^3}{x+y} \cdot \frac{x^2+2xy+y^2}{4xy} \cdot \left(-\frac{2y}{y^2-x^2}\right)$	$\frac{x^2}{x-y}$
154	$\left(a-\frac{1}{b}\right) \cdot \left(a+\frac{1}{b}\right) \cdot \left(\frac{b^2}{a^2b^2+2ab+1}\right)$	$\frac{ab-1}{ab+1}$
155	$\frac{x^4-y^4}{x^3+x^2} \cdot \frac{x}{x^3+xy^2-y^2-x^2} \cdot \frac{1-x^2}{y-x}$	$\frac{x+y}{x}$
156	$\left(1-\frac{4}{a^2}\right) \cdot \left(\frac{a}{a+1} + \frac{4}{a^2-a-2}\right) : \frac{a^3-a^4+8-8a}{2-2a}$	$\frac{2}{a^2(a+1)}$
157	$\frac{b}{b^2-a^2} \cdot (b-a) : \left[\left(\frac{b-a}{b}\right) \cdot \left(\frac{ab}{b^2-a^2}\right)\right]$	$\frac{b}{a}$
158	$\frac{2}{x} \cdot \frac{(x+y)(x-y)+2y^2}{2y(x-y)} : \frac{x^2+y^2}{xy-y^2}$	$\frac{1}{x}$
158	$\frac{y+1}{y-1} \cdot \frac{y^2+y-2}{y^2+y} : (y^2-4)$	$\frac{1}{y(y-2)}$
160	$\frac{4(b-1)-(3b-5)}{b^2-4b+3} \cdot \frac{b^3+3b-4b^2}{b^2+3b} : (b+3)$	$\frac{b+1}{(b+3)^2}$
161	$\left[\frac{x^2-6x+9}{3x} \cdot \frac{6x}{x-3}\right] \cdot \frac{x-2}{x^2-x-6} : (x+2)$	$\frac{2x-4}{(x+2)^2}$
162	$\frac{a+a^3-a(a^2-1)}{(a^2-1)(1+a^2)} \cdot \frac{a^3-a^2+a-1}{3a+1} : \frac{6}{a}$	$\frac{a^2}{3(a+1)(3a+1)}$
163	$\frac{ab-a(a+b)}{a+b} \cdot \frac{ab-b(a+b)}{a+b} \cdot \frac{a^2+2ab+b^2}{ab} : ab$	1
164	$(y^4-2y^3) \left(1+\frac{2}{y}+\frac{4}{y^2}\right) : y$	y^3-8
165	$\left(a+\frac{4}{a}+4\right) \cdot \left(2a-\frac{a^2+a}{a+2}\right) \cdot \frac{1}{a+3} : (a+2)^2$	$\frac{1}{a+2}$
166	$2x \left(1-\frac{x-1}{2x}-\frac{2y}{x+y}\right) (x+y)$	$x^2+x+y-3xy$
167	$\frac{1+x+2x^2-x(1+x)}{x(1-x)(1+x)} \cdot \frac{x^2+1+2x}{x^2+1} \cdot \frac{x}{x+1} : \frac{1}{1-x}$	1
168	$\frac{2xb}{x^2-xy+y^2} \cdot \frac{x^3+y^3}{x^2+xy} : 2b^2$	$\frac{1}{b}$
169	$\frac{(x-1)(x^2+x+1)+1}{x-1} \cdot \frac{(x+1)(x^2-x+1)-1}{x+1} : \frac{1}{x^2+2x+1}$	$\frac{x^6(x+1)}{x-1}$
170	$\frac{(x+y)^2-x^2-y^2}{x+y} \cdot \frac{x^2-y^2}{2x^2y^2} : (x^2-y^2)$	$\frac{1}{xy(x+y)}$