5 $-\frac{1}{2}+2a-3b+\frac{1}{2}-a+3b$ [a]

6 $7a^5-(-2a)-(+8a)+(-a^5)$ [$6a^5-6a$]

7 $-\frac{2}{3}a+a^2-\left(-\frac{1}{3}a\right)-\frac{1}{2}a^2$ $\left[\frac{1}{2}a^2-\frac{1}{3}a\right]$

8 $0{,}5x-0{,}2xy+\frac{1}{2}xy-x$ [$-0{,}5x+0{,}3xy$]

9 $2x^{-4}-3x^{-2}+x^{-4}-x^{-2}$ [$3x^{-4}-4x^{-2}$]

10 $-(-xy)+4xy-\frac{5}{2}+(-5xy)+\frac{3}{2}$ [-1]

11 $\frac{4}{3}x^4-\frac{1}{2}x^3+\frac{1}{4}x^4+0{,}5x^3$ $\left[\frac{19}{12}x^4\right]$

20 $-x^2 \cdot \left(+\frac{2}{3}xy^4\right) \cdot \left(-\frac{3}{8}y^5\right)$ $\left[\frac{1}{4}x^3y^9\right]$

21 $+\frac{2}{3}xyz^3 \cdot \left(-\frac{3}{10}x^2\right) \cdot (-2x^4y^2z^5)$ $\left[\frac{2}{5}x^7y^3z^8\right]$

22 $\frac{2}{5}xy \cdot (-0{,}2x^2y^3) \cdot \left(+\frac{25}{4}y^4\right) \cdot 2x$ $[-x^4y^8]$

42 $\left[-2a \cdot (-3ab) + a^2b - b \cdot \left(-\frac{1}{2}a^2\right)\right] \cdot \left(a + \frac{3}{2}a\right)$ $\left[\frac{75}{4}a^3b\right]$

Calcolare le seguenti potenze:

69 $(-5a^2b^3)^2$; $\left(+\frac{1}{2}ab^2c\right)^2$ $\left[25a^4b^6;\ \frac{1}{4}a^2b^4c^2\right]$

70 $\left(-\frac{2}{3}xy^5\right)^3$; $\left(+\frac{1}{4}x^3y^2z\right)^3$ $\left[-\frac{8}{27}x^3y^{15};\ \frac{1}{64}x^9y^6z^3\right]$

71 $(-2a^5bc^3)^4$; $(+3ab^6)^0$ $[16a^{20}b^4c^{12};\ 1]$

72 $(-a^2b^3)^2$; $\left(-\frac{1}{2}ab^3\right)^3$ $\left[a^4b^6;\ -\frac{1}{8}a^3b^9\right]$

78 $\left(-\frac{3}{2}ab - 0{,}5ab\right)^3 \cdot \left(1-\frac{2}{3}\right)^2$ $\left[-\frac{8}{9}a^3b^3\right]$

79 $\left(\frac{1}{2}ab - 3ab\right) : \left(a^2 - 3a^2 + \frac{1}{2}a^2\right)^0$ $\left[-\frac{5}{2}ab\right]$

80 $(-0{,}2x^4 + 0{,}6x^4)^2 : \left(3x - \frac{5}{2}x\right)$ $[0{,}32x^7]$

81 $\left[(-2a)^2 \cdot \left(\frac{1}{2}ab\right)^3 - a^5b^3\right] : (a^2b)$ $\left[-\frac{1}{2}a^3b^2\right]$

Trovare il M.C.D. ed il m.c.m. dei seguenti gruppi di monomi interi:

106 $3a^3b^2$; $6a^4b^3$; $27a^2b^5$ $[3a^2b^2;\ 54a^4b^5]$

107 $a^4b^2c^6$; $3ab^5$; $2a^6bc^4$ $[ab;\ 6a^6b^5c^6]$

108 $10x^2y^3$; $15x^7y$; $45x^3y^4z^5$ $[5x^2y;\ 90x^7y^4z^5]$

109 $4x^3y^2$; $3x^2z^3$; $5yz$ $[1;\ 60x^3y^2z^3]$

114 $\left(\frac{1}{2} - x^3 + 3x - y\right) + \left(\frac{3}{2} + x^3 - 2x - 8y\right)$ $[2 + x - 9y]$

115 $\left(\frac{1}{3}ab - \frac{1}{2}a^2 + 1\right) + \left(-\frac{2}{3}ab - \frac{3}{2}a^2 + \frac{1}{3}\right)$ $\left[-\frac{1}{3}ab - 2a^2 + \frac{4}{3}\right]$

116 $\left(x^4 - \frac{x^2y}{3} + 4x - 2y\right) + (2y - 6x) + \left(\frac{2x^2y}{3} - x^4\right)$ $\left[\frac{1}{3}x^2y - 2x\right]$

117 $(8x^2 - 3xy + 4) + (-2xy - 5x^2 - 4 + y^2)$ $[3x^2 - 5xy + y^2]$

Eseguire le seguenti moltiplicazioni tra un monomio ed un polinomio:

145 $2a^2 \cdot (ab - a^3 + 1)$; $[2a^3b - 2a^5 + 2a^2]$

146 $xy^2 \cdot (-x + 2xy + y^2)$ $[-x^2y^2 + 2x^2y^3 + xy^4]$

147 $\frac{1}{2}a^3b \cdot (-2 + 4ab)$ $[-a^3b + 2a^4b^2]$

148 $\frac{x^2y}{3} \cdot \left(x^4 - 9xy^2 + \frac{3}{2}y\right)$ $\left[\frac{x^6y}{3} - 3x^3y^3 + \frac{x^2y^2}{2}\right]$

149 $-2x^4 \cdot \left(\frac{2x}{3} - \frac{4}{5}xy^3 - \frac{1}{2}\right)$ $\left[-\frac{4}{3}x^5 + \frac{8}{5}x^5y^3 + x^4\right]$

150 $-\frac{a^5b^2}{2} \cdot \left(-a^5 + 4ab^2 - \frac{ab^3}{2}\right)$ $\left[\frac{1}{2}a^{10}b^2 - 2a^6b^4 + \frac{1}{6}a^6b^5\right]$

Eseguire le seguenti moltiplicazioni tra polinomi:

169 $(3a - 2b) \cdot (a + 2b)$ $[3a^2 - 4b^2 + 4ab]$

170 $(a^2 - 3b + 1)(-2 + a^2 - b)$ $[-a^2 + a^4 - 4a^2b + 5b + 3b^2 - 2]$

171 $(3 - x + 2y)(x - 3y + 1)$ $[-x^2 - 6y^2 + 5xy + 2x - 7y + 3]$

172 $\left(-\frac{y}{2} + 2x - \frac{3}{2}\right)(-x + 2y + 1)$ $\left[-2x^2 - y^2 + \frac{9}{2}xy + \frac{7}{2}x - \frac{7}{2}y - \frac{3}{2}\right]$

Eseguire i seguenti prodotti notevoli:

Quadrati di binomi

195 $(2a + 3b)^2$ $[4a^2 + 12ab +$

196 $\left(\frac{1}{2}a - 2b\right)^2$ $\left[\frac{a^2}{4} - 2ab +\right.$

197 $\left(-\frac{3}{2}a + 2a^2\right)^2$ $\left[\frac{9}{4}a^2 - 6a^3 +\right.$

198 $(x^2 + 2xy)^2$; $\left(\frac{1}{4}x - 2y\right)^2$

199 $\left(\frac{a^2}{4} - 4\right)^2$ $\left[\frac{a^4}{16} - 2a^2 +\right.$

200 $\left(xy - \frac{1}{2}x^2y^3\right)^2$ $\left[x^2y^2 - x^3y^4 + \frac{1}{4}x\right.$

Cubi di binomi

203 $(2a + b)^3$ $[8a^3 + 12a^2b + 6ab^2 + b^3]$

204 $(a + 3b)^3$; $(2a + 3b)^3$

205 $\left(\frac{a}{3} + 2b\right)^3$ $\left[\frac{a^3}{27} + \frac{2a^2b}{3} + 4ab^2 + 8b^3\right]$

206 $\left(\frac{1}{3}a^2 - ab\right)^3$ $\left[\frac{1}{27}a^6 - \frac{1}{3}a^5b + a^4b^2 - a^3b^3\right]$

207 $(ab - 3b^2)^3$; $(2a - 5b)^3$

208 $\left(\frac{2}{3}x^2 - \frac{1}{3}y^3\right)^3$ $\left[\frac{8}{27}x^6 - \frac{4}{9}x^4y^3 + \frac{2}{9}x^2y^6 - \frac{1}{27}y^9\right]$

209 $\left(-3x - \frac{1}{9}xy\right)^3$ $\left[-27x^3 - 3x^3y - \frac{1}{9}x^3y^2 - \frac{1}{729}x^3y^3\right]$

210 $\left(-2a^2 - \frac{1}{2}ab^3\right)^3$; $(a + 3a^2b)^3$

211 $\left(\frac{a}{b} - b\right)^3$ $\left[\frac{a^3}{b^3} - 3\frac{a^2}{b} + 3ab - b^3\right]$

184 $\frac{3}{2}a\,(2a+1-b)-(-a+b+4)\,(a-b)-4a\,(a-1)-\frac{3}{2}a$ $\left[-\frac{7}{2}ab+b^2+\right.$

185 $(a-2b)\,(a+2b)-a\,(a+2b)-b\,(-4b-2a)$

186 $2a\,(a-3b)\,(a+b)-b\,(2a+b)\,(a-b)$ $[2a^3+b^3-5ab^2-6a^2$

187 $\frac{2}{3}x^2\,(x+y-1)-2x\,(x+1)\,(x-y)-\frac{4}{3}x^2\,(2y-x)$ $\left[-\frac{8}{3}x^2+2xy\right.$

201 $(-2x-3y^2)^2$ $[4x^2+12xy^2+9y^4]$

202 $\left(\frac{4}{5}x^2-\frac{5}{2}xy^2\right)^2$ $\left[\frac{16}{25}x^4-4x^3y^2+\frac{25}{4}x^2y^4\right]$

Somma per differenza

225 $(a + 2b)\,(a - 2b)$ $[a^2 - 4b^2]$

226 $\left(\frac{1}{2}a^2 + 2b\right)\left(\frac{1}{2}a^2 - 2b\right)$; $(3a - b^2)\,(3a + b^2)$

227 $(3x^2y - y)\,(3x^2y + y)$ $[9x^4y^2 - y^2]$

228 $\left(\frac{1}{2}xy + \frac{1}{3}\right)\left(\frac{1}{2}xy - \frac{1}{3}\right)$; $(x^2y + y^3)\,(x^2y - y^3)$

Eseguire le operazioni indicate:

245 $(2x-1)^2+\left(\frac{3}{2}x-1\right)^2$ $\left[\frac{25}{4}x^2-7x+2\right]$

246 $(x+2y)^2-(x-2y)^2-8xy$ [0]

307 $(x^5 - x^2 + 2x^3) : (-x^2)$ $[-x^3 + 1 - 2x]$

308 $\left(\frac{2}{3}a^4 - \frac{1}{3}a^2 + a\right) : \left(\frac{1}{2}a\right)$ $[2a^3 - a + 3]$

309 $\left(-a^6b^2 + 2a^5b^3 - \frac{ab^4}{2}\right) : (-ab^2)$ $\left[a^5 - 2a^4b + \frac{1}{2}b^2\right]$

310 $\left(\frac{3}{2}a^5 - \frac{4}{3}a^2 + \frac{1}{3}a^3\right) : \left(\frac{2}{3}a^2\right)$ $\left[\frac{9}{4}a^3 - 2 + \frac{1}{2}a\right]$

340 $\left(-x^2+\frac{3}{2}x^3-2\right):(3x^2+2x)$ $\left[Q=\frac{1}{2}x-\frac{2}{3};\ R=\frac{4}{3}x-2\right]$

341 $\left(-\frac{3}{5}a^4-2-6a^3-\frac{1}{5}a\right):(-3a^3-1)$ $\left[Q=\frac{1}{5}a+2;\ R=0\right]$

342 $\left(\frac{8}{3}x^7+\frac{2}{3}x^2-1\right):(1-4x^5)$ $\left[Q=-\frac{2}{3}x^2;\ R=\frac{4}{3}x^2-1\right]$

Eseguire le seguenti divisioni con la regola di Ruffini ed effettuare poi la verifica nei casi in cui non è riportato il risultato:

362 $(2a^3 - a^2 + 3a - 1) : (a - 1)$ $[Q = 2a^2 + a + 4;\ R = 3]$

363 $(-a^2 + 1 - 3a) : (a + 1)$ $[Q = -a - 2;\ R = 3]$

364 $(3a^4 - a^2 + 2 - a) : (a - 2)$ $[Q = 3a^3 + 6a^2 + 11a + 21;\ R = 44]$

365 $(x - 2x^2 - 3x^4) : (x + 2)$ $[Q = -3x^3 + 6x^2 - 14x + 29;\ R = -58]$

366 $(x^2 - x^3 + 18) : (x - 3)$ $[Q = -x^2 - 2x - 6;\ R = 0]$

Eseguire le seguenti divisioni con la regola di Ruffini ed effettuare poi la verifica nei casi in cui non è riportato il risultato:

383 $(2x^2 - 3x + 1) : (2x + 1)$ $[Q = x - 2;\ R = 3]$

384 $(3x^2 - 3 + 2x) : (3x - 2)$ $\left[Q = x + \frac{4}{3};\ R = -\frac{1}{3}\right]$

385 $(a^2 - 2a + 4) : (3a + 1)$

386 $(8a^3 - 27) : (2a - 3)$ $[Q = 4a^2 + 6a + 9;\ R = 0]$

Scomporre i seguenti polinomi raccogliendo i fattori comuni:

1 $2a^2b + 6ab^2$; $3ab + 6a^2 + 9a$ $[2ab(a + 3b); \ldots]$

2 $8x^4 - 4x^3 + 2x^2$; $25x^3y^4 - 5x^2y^3 + 5x^2y^2$ $[2x^2(4x^2 - 2x + 1); \ldots]$

3 $2a^3x^2y - 4a^2x^3y^2 + 6ax^2y^2$; $0{,}20a^2x^3 - 0{,}15a^3x + 0{,}40ax^2$

4 $\frac{1}{3}ab^3c^2 - \frac{1}{9}a^2bc^4$;

5 $15x^2y^3 - 6x^3y^2 - 3xy^2$;

6 $25ab^2c - 30ac^2 + 10a^2b$;

7 $6a^4 + 9a^3 - 12a^7$;

$3x^2 - 27x^3y + 3x^2y^2$

$12a^2b^3 + 30a^3b + 6ab$

$x^5y^3 - x^2y + x^4y^5 + 2x^3y^2$

$0{,}5b^3 - 0{,}25b^5 + \frac{1}{2}b^2$

Scomporre i seguenti polinomi ricordando che $a^2 - b^2 = (a + b)\,(a - b)$:

46 $a^2 - b^2$; $4a^2 - 25$; $a^2 - 9b^2$

47 $4x^2 - 9y^2$; $\frac{25}{9} - a^2$; $x^2 - \frac{9}{4}$

48 $64x^2 - 1$; $x^6 - y^4$; $1 - 4y^2x^2$

49 $x^4 - y^4$; $64 - a^4$; $16 - a^4$

50 $81x^4 - 16y^4$; $100 - 81a^2$; $a^8 - 1$

Scomporre i seguenti polinomi tenendo presente il prodotto notevole quadrato di un polinomio:

69 $a^2 + b^2 + 2ab$; $a^2 + 4b^2 - 4ab$

70 $4x^2 + 9y^2 + 12xy$; $x^2 + 1 - 2x$

71 $\frac{x^2}{4} + 4 + 2x$; $\frac{9}{4}x^2 + 25y^2 + 15xy$

72 $4a^2b^2 + \frac{1}{16} - ab$; $a^2 + 16 - 8a$

73 $8x^2 + 18y^2 - 24xy$; $2ax^2 + 2a - 4ax$

74 $a^3 + 4ab^2 + 4a^2b$; $a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$

Scomporre i seguenti polinomi tenendo presenti gli esercizi precedenti:

85 $a^2 + 2ab + b^2 - 1$; $x^2 + y^2 - 2xy - 4$

86 $4x^2 + y^2 + 4xy - z^2$; $a^2 - 4ab + 4b^2 - 9$

87 $25 - 10x + x^2 - y^2$; $9a^2 + 12ab + 4b^2 - 1$

88 $9 - a^2 - b^2 + 2ab$; $1 - x^2 - \frac{1}{4}y^2 + xy$

89 $4a^2b^2 - 9a^2 - b^2 + 6ab$; $x^2 + y^2 - 2xy - a^2 - b^2 - 2ab$

Scomporre i seguenti polinomi tenendo presente che $a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$:

112 $a^3 - 8$; $8a^3 + 27$ 113 $a^3 - 1$; $b^3 + 8$

114 $8x^3 - 27$; $a^3b^3 + \frac{1}{27}$ 115 $\frac{1}{8} - 64x^3y^6$; $a^6 + b^3$

116 $a^6 - b^3$; $9x^3 - 243$ 117 $\frac{3}{8} + 81a^3$; $2a^3 - 54$

Scomporre i seguenti trinomi:

136 $x^2 - 3x + 2$; $x^2 - 2x - 3$

137 $x^2 + 8x + 7$; $x^2 + x - 12$

138 $x^2 + 10x - 11$; $x^2 + 9x + 20$

139 $x^2 - 4x - 12$; $a^2 - 15a + 56$

140 $b^2 + 7b + 10$; $b^2 + b - 72$

141 $2x^2 - 2x - 40$; $3x^2 + 21x + 36$

142 $3a^3 + 12a^2 - 63a$; $x^4 - 12x^3 + 35x^2$

143 $5b^3 - 10b^2 - 15b$; $-x^3 - 2x^2 + 8x$

Ridurre ai minimi termini le seguenti frazioni algebriche letterali:

1 $\frac{4xy}{6x^2}$; $\frac{3x^3y^2}{12xy^4}$; $\frac{15a^6b^2c}{18a^2bc}$ $\left[\frac{2y}{3x} ; \frac{x^2}{4y^2} ; \frac{5a^4b}{6}\right]$

2 $\frac{5ab}{10a^2}$; $\frac{7a^6b^3}{21a^2b^3}$; $\frac{18a^9}{6a^3b^2}$ $\left[\frac{b}{2a} ; \frac{a^4}{3} ; \frac{3a^6}{b^2}\right]$

3 $-\frac{6ab^2c}{9a^2c^2}$; $-\frac{10x^4y^3}{15xy^2z}$; $\frac{7a}{21a^2b}$ $\left[-\frac{2b^2}{3ac} ; -\frac{2x^3y}{3z} ; \frac{1}{3ab}\right]$

16 $\dfrac{7a^2 - 7b^2}{3a + 3b}$; $\dfrac{4a^2 - 1}{4a^2 + 1 + 4a}$ $\left[\dfrac{7(a-b)}{3} ; \dfrac{2a-1}{2a+1}\right]$

17 $\dfrac{4x^2y^2 + 1 + 4xy}{4x^2y^2 - 1}$; $\dfrac{x^3 + y^3 + 3x^2y + 3xy^2}{4x^2 + 8xy + 4y^2}$ $\left[\dfrac{2xy+1}{2xy-1} ; \dfrac{x+y}{4}\right]$

18 $\dfrac{a^3 - 3a^2 + 3a - 1}{a^2 - 1}$; $\dfrac{a^2 + 2a + 1}{a^3 + 1 + 3a + 3a^2}$ $\left[\dfrac{(a-1)^2}{a+1} ; \dfrac{1}{a+1}\right]$

19 $\dfrac{x^3 - 1}{x^2 - 2x + 1}$; $\dfrac{x^3 + 1}{3x + 3}$ $\left[\dfrac{x^2 + x + 1}{x - 1} ; \dfrac{x^2 - x + 1}{3}\right]$

20 $\dfrac{a^3b^3 - 8}{2ab - 4}$; $\dfrac{1 - 27a^3}{1 + 27a^3 + 9a^2 + 27a^2}$ $\left[\dfrac{a^2b^2 + 2ab + 4}{2} ; \dfrac{1 + 3a + 9a^2}{3}\right]$

21 $\dfrac{14x - 7y}{4x^2 - y^2}$; $\dfrac{a^2 - 5a + 6}{a^2 - 4a + 4}$ $\left[\dfrac{7}{2x + y} ; \dfrac{a - 3}{a - 2}\right]$

22 $\dfrac{x^2 + 5x + 6}{x^2 + 4x + 4}$; $\dfrac{2x^2 - 10x + 12}{x^2 - 6x + 9}$ $\left[\dfrac{x+3}{x+2} ; \dfrac{2(x-2)}{x-3}\right]$

23 $\dfrac{x^4 - 16}{x^4 + 16 - 8x^2}$; $\dfrac{16 - a^4}{4 + a^2 - 4a}$ $\left[\dfrac{x^2 + 4}{x^2 - 4} ; \dfrac{(4 + a^2)(2 + a)}{2 - a}\right]$

24 $\dfrac{8x^3 - y^3}{4x^2 - y^2}$; $\dfrac{8x^3 + y^3}{2xy + y^2}$ $\left[\dfrac{4x^2 + 2xy + y^2}{2x + y} ; \dfrac{4x^2 - 2xy + y^2}{y}\right]$

25 $\dfrac{4a^2 + 12ab + 9b^2}{14a + 21b}$; $\dfrac{4a^2 + 20ab + 25b^2}{18a + 45b}$ $\left[\dfrac{2a + 3b}{7} ; \ldots\right]$

26 $\dfrac{27x^3 - y^3}{18x^2 + 6xy + 2y^2}$; $\dfrac{8a^3 - b^3}{12a^2 + 6ab + 3b^2}$ $\left[\dfrac{3x - y}{2} ; \ldots\right]$

27 $\dfrac{a^2 + 2a + 1}{a^3 - a}$; $\dfrac{4b^2 + 4b + 1}{8b^3 - 2b}$; $\dfrac{a^3 + 1}{4a^3 - 4a^2 + 4a}$ $\left[\dfrac{a + 1}{a(a - 1)} ; \ldots\right]$

28 $\dfrac{a^2 - 3a - 4}{a^2 - 4a - 5}$; $\dfrac{a^2 - 3a + 2}{a^2 - 4a + 3}$; $\dfrac{x^4 - 2x^2 + 1}{x^3 - x + 3x^2 - 3}$ $\left[\dfrac{a - 4}{a - 5} ; \ldots\right]$

Ridurre le seguenti frazioni letterali al minimo comune denominatore:

47 $\frac{2}{3x}$; $\frac{1}{6x^2}$; $\frac{y}{2x}$ $\left[\frac{4x}{6x^2} ; \frac{1}{6x^2} ; \frac{3xy}{6x^2}\right]$

48 $\frac{a}{3b^2}$; $\frac{3}{2ab}$; $\frac{5b}{15a^2}$ $\left[\frac{2a^3}{6a^2b^2} ; \frac{9ab}{6a^2b^2} ; \frac{2b^3}{6a^2b^2}\right]$

49 $\frac{3}{a+b}$; $\frac{2}{a^2+ab}$ $\left[\frac{3a}{a(a+b)} ; \frac{2}{a(a+b)}\right]$

50 $\frac{2x}{x-y}$; $\frac{4y}{x+y}$; $\frac{1}{x^2-y^2}$ $\left[\frac{2x^2+2xy}{(x-y)(x+y)} ; \frac{4xy-4y^2}{(x-y)(x+y)} ; \frac{1}{(x-y)(x+y)}\right]$

51 $\frac{2-x}{x^2+2xy+y^2}$; $\frac{3+y}{x^2-y^2}$ $\left[\frac{2x-2y-x^2+xy}{(x+y)^2(x-y)^2} ; \frac{3x+3y+xy+y^2}{(x+y)^2(x-y)}\right]$

60 $\dfrac{3a}{3a+b} + \dfrac{b}{3a-b} + \dfrac{1-9a^2}{9a^2-b^2}$ $\left[\dfrac{1+b^2}{9a^2-b^2}\right]$

61 $\dfrac{a-b}{a^2} + \dfrac{a}{a^2+ab} + \dfrac{b-a}{b^2+ab}$ $\left[\dfrac{3a^2b-b^3-a^3}{a^2b(a+b)}\right]$

62 $\dfrac{x}{2x+2y} - \dfrac{2y}{3x-3y} - \dfrac{2}{3}$ $\left[-\dfrac{x^2+7xy}{6(x^2-y^2)}\right]$

63 $\dfrac{1}{x^2-y^2} + \dfrac{1}{x^2+2xy+y^2} - \dfrac{2}{x^2-2xy+y^2}$ $\left[\dfrac{-2y^2-6xy}{(x^2-y^2)^2}\right]$

64 $a - \dfrac{3a}{a^3-1} \cdot \dfrac{a^3-a^2}{a^2+a+1}$ $\left[\dfrac{2a^3-a^2-4a}{a^3-1}\right]$

79 $\dfrac{a^2-4a+4}{a^3-6a^2+12a-8}+\dfrac{a}{4-a^2}$ $\left[\dfrac{2}{(a-2)(a+2)}\right]$

80 $\dfrac{2x^2}{x^3-8}-\dfrac{x^2+2}{x^2+2x+4}+\dfrac{1}{2-x}$ $\left[\dfrac{-2x}{x^3-8}\right]$

81 $\dfrac{1}{2a+b}-\dfrac{1}{2a-b}-\dfrac{2b}{b^2-4a^2}$ [0]

96 $\dfrac{3x}{4x-6y} \cdot \dfrac{4x^2-12xy+9y^2}{2x+3y} \cdot \left(-\dfrac{2}{x}\right)$ $\left[-\dfrac{6x-9y}{2x+3y}\right]$

97 $\dfrac{a-1}{a} \cdot \left(-\dfrac{a^2+a+1}{2-a}\right) \cdot \dfrac{a-2}{a^3-1}$ $\left[\dfrac{1}{a}\right]$

98 $\dfrac{2x-2}{x^2-6x+5} \cdot \dfrac{(x-5)^2}{4x} \cdot \left(-\dfrac{2x^2y}{5-x}\right)$ $[xy]$

99 $\dfrac{a^6-a^5}{b^5-b^4} \cdot \dfrac{b^3-b^2}{a^4-a^3} \cdot (-1)$ $\left[-\dfrac{a^2}{b^2}\right]$

113 $\left(\frac{4a^2-9}{a^4-a} : \frac{4a^2+12a+9}{1-a^2}\right) : \frac{2a^2-a-3}{a+a^2+a^3}$ $\left[-\frac{1}{2a+3}\right]$

114 $\left[\left(\frac{8-a^3}{6ab} : \frac{2a-4}{4+2a+a^2}\right) : \left(-\frac{3a^3b^2}{2}\right)\right] : \frac{(a^2+2a+4)^2}{18a^4}$ $\left[\frac{1}{b^3}\right]$

129 $\left(\frac{4x^2y^3}{5z}\right)^3$; $\left(-\frac{2x^6y}{z^2}\right)^3$ $\left[\frac{64x^6y^9}{125z^3};\ -\frac{8x^{18}y^3}{z^6}\right]$

130 $\left(-\frac{2a}{3b^2}\right)^4$; $\left(\frac{bc^2}{5a^3}\right)^4$ $\left[\frac{16a^4}{81b^8};\ \frac{b^4c^8}{625\,a^{12}}\right]$

146 $\left(\frac{6x}{9x^2-1}-\frac{1}{3x+1}-\frac{1}{3x-1}\right)\cdot\left(\frac{2}{x+1}-3\right)$

147 $\left(\frac{3x+1}{3x-1}-\frac{3x-1}{3x+1}\right):\frac{4x^2}{1-3x}$

148 $\left[(2-x)^2\cdot\left(\frac{1}{x^2-4}+\frac{1}{x+2}\right)\right]:\left(\frac{x^2-2x+1}{x-1}\right)$

149 $\left(\frac{2x^2}{x^3-8}-\frac{x+2}{x^2+2x+4}+\frac{1}{2-x}\right)\cdot\frac{8-x^3}{4}$

164 $\left(\frac{5a+5}{a^2+3a+2}-1\right)\cdot\left(\frac{1}{2}+\frac{3a+6}{a^2-a-6}\right)\cdot(a+2)$ $\left[-\frac{a+3}{2}\right]$

165 $\left(\frac{1}{y}+\frac{x}{xy-y^2}-\frac{y^3-x^3}{xy^3-x^3y}+\frac{y}{x^2+xy}\right)\cdot\frac{xy-y^2}{x}-1$ [0]

166 $\left(\frac{5x-13}{2x^2-2}+\frac{6x-21}{2x+2}-\frac{3x-5}{x-1}\right):\frac{3}{x^2+2x+1}+x$ $[-2x-3]$