

Scomposizione di polinomi

raccoglimento totale		
1	$abx^2 + 2ab^2x + a^2bx$	$R: abx(x + 2b + a)$
2	$4a^2x^2 - 6a^3x + 8a^2x^3$	$R: 2a^2x(2x - 3a + 4x^2)$
3	$x^4y^2 + x^6y^4 - x^3y^3$	$R: x^3y^2(x + x^3y^2 - y)$
4	$15a^{10} - 20a^8 + 25a^6$	$R: 5a^6(3a^4 - 4a^2 + 5)$
5	$b^2(3x - y) - b(3x - y)^2 - 3(3x - y)$	$R: (3x - y)[b^2 - b(3x - y) - 3]$
6	$(x - y)^2 + 2(x - y) - xy(3x - y)$	$R: (x - y)(x - y + 2 - xy)$
raccoglimento parziale		
7	$ay - 2by + a^2 - 2ab$	$R: (a - 2b)(a + y)$
8	$4a^2 - 2a + 6ab - 3b$	$R: (2a - 1)(2a + 3b)$
9	$2x^2 - 3ax + xy - 2bx + 3ab - by$	$R: (x - b)(2x - 3a + y)$
10	$2x(x - y)^2 - 4xy + 4y^2$	$R: 2(x - y)[x(x - y) - 2y]$
11	$(a - 1)y + 1 - a$	$R: (a - 1)(y - 1)$
12	$(a + b)^2(a - b) - 4ax - 4bx + ab^2 + b^3$	$R: (a + b)(a - b - 4x + b^2)$
differenza di due quadrati		
13	$x^6y^2 - 1$	$R: (x^3y + 1)(x^3y - 1)$
14	$a^4 - 4$	$R: (a^2 - 2)(a^2 + 2)$
15	$x^4 - 1$	$R: (x^2 + 1)(x + 1)(x - 1)$
16	$\frac{9}{4}x^2 - \frac{1}{9}y^2$	$R: \left(\frac{3}{2}x - \frac{1}{3}y\right)\left(\frac{3}{2}x + \frac{1}{3}y\right)$
17	$(a - 1)^2 - b^2$	$R: (a - 1 - b)(a - 1 + b)$
18	$(a + b)^2 - (x - y)^2$	$R: (a + b - x + y)(a + b + x - y)$
sviluppo del quadrato di un binomio		
19	$x^2 + 9 + 6x$	$R: (x + 3)^2$
20	$4a^2 + 9 - 12a$	$R: (2a - 3)^2$

Scomposizione di polinomi

21	$25a^4b^2 - 10a^2bc^2 + c^4$	$R: (5a^2b - c^2)^2$
22	$\frac{1}{4}x^2 + \frac{1}{3}xy + \frac{1}{9}y^2$	$R: \left(\frac{1}{2}x + \frac{1}{3}y\right)^2$
23	$(a - 1)^2 - 2(a - 1) + 1$	$R: (a - 2)^2$
24	$(a + b)^2 + 2(a + b)(x + y) + (x + y)^2$	$R: (a + b + x + y)^2$
sviluppo del quadrato di un trinomio		
25	$a^2 + x^2 + 81 + 2ax + 18a + 18x$	$R: (a + x + 9)^2$
26	$a^2 + b^2 + 16 - 2ab - 8a + 8b$	$R: (a - b - 4)^2 = (b + 4 - a)^2$
27	$x^2 + 4y^2 + 9z^2 - 4xy + 6xz - 12yz$	$R: (x - 2y + 3z)^2 = (-x + 2y - 3z)^2$
28	$a^4 + 9 + 4x^2 + 18x^2 + 4x^3 + 12x$	$R: (x^2 + 3 + 2x)^2$
29	$\frac{9}{4}x^2 + x^2y^2 + 4y^2 + 3x^2y - 6xy^2 - 4xy^3$	$R: \left(\frac{3}{4}x - xy + 2y\right)^2 = \left(-\frac{3}{4}x + xy - 2y\right)^2$
sviluppo del cubo di un binomio		
30	$a^3 + 6a^2x + 12ax^2 + 8x^3$	$R: (a + 2x)^3$
31	$27x^3 - 27x^2y + 9xy^2 - y^3$	$R: (3x - y)^3$
32	$1 - x^6 - 3x^2 + 3x^4$	$R: (1 - x^2)^3$
33	$a^6b^3 - 6a^4b^2 + 12a^2b - 8$	$R: (a^2b - 2)^3$
34	$\frac{1}{27}x^6 + \frac{1}{3}x^4y + x^2y^2 + y^3$	$R: \left(\frac{1}{3}x^2 + y\right)^3$
35	$125a^9 + 150a^6b + 60a^3b^2 + 8b^3$	$R: (5a^3 + 2b)^3$
riducendo prima a differenza di quadrati		
36	$a^2 + 9 + 6a - (2x - y)^2$	$R: (a + 3 - 2x + y)(a + 3 + 2x - y)$
37	$a^2 + b^2 - c^2 + 2ab$	$R: (a + b - c)(a + b + c)$
38	$x^2 + y^2 - 2xy - y^4$	$R: (x - y + y^2)(x - y - y^2)$
39	$4a^2 - b^2 - c^2 + 2bc$	$R: (2a + b - c)(2a - b + c)$
40	$a^2 - 4b^2 - 9 + 12b$	$R: (a + 2b - 3)(a - 2b + 3)$

Scomposizione di polinomi

41	$a^6 - 4y^2 - 1 - 4y$	$R: (a^3 - 2y - 1)(a^3 + 2y + 1)$
somma e differenza di cubi		
42	$a^3 - b^3$	$R: (a - b)(a^2 + ab + b^2)$
43	$x^3 + y^3$	$R: (x + y)(x^2 - xy + y^2)$
44	$a^6 - 1$	$R: (a^2 - 1)(a^4 + a^2 + 1)$
45	$a^6 + 27b^3$	$R: (a^2 + 3b)(a^4 - 3a^2b + 9b^2)$
46	$125 - y^3$	$R: (5 - y)(25 + 5y + y^2)$
47	$8 + a^9$	$R: (2 + a^3)(4 - 2a^3 + a^6)$
trinomio di secondo grado		
48	$x^2 - 2x - 15$	$R: (x - 5)(x + 3)$
49	$2a^2 + 7a + 3$	$R: (2a + 1)(a + 3)$
50	$5x^2 - 2xy - 16y^2$	$R: (5x + 8y)(x - 2y)$
51	$4a^2 - 11ab + 7b^2$	$R: (a - b)(4a - 7b)$
52	$x^4 + 4x^2 - 45$	$R: (x^2 - 5)(x^2 + 9)$
53	$3a^2 + a - 10$	$R: (3a - 5)(a + 2)$
regola di Ruffini		
54	$x^3 - 5x^2 - 4x + 20$	$R: (x - 5)(x - 2)(x + 2)$
55	$3a^3 + 2a^2 - 4a - 3$	$R: (a + 1)(3a^2 - a - 3)$
56	$4b^4 - 3b^2 + 5b - 6$	$R: (b - 1)(4b^3 + 4b^2 + b + 6)$
57	$x^4 - 2x^3 - 10x^2 + 4x + 16$	$R: (x + 2)(x^3 - 4x^2 - 4x + 8)$
58	$a^4 + 5a^3 + 5a^2 - 5a - 6$	$R: (a - 1)(a + 1)(a + 2)(a + 3)$
59	$3x^3 + 8x^2y + 9xy^2 + 10y^3$	$R: (x + 2y)(x^2 + 2xy + 5y^2)$
esercizi di riepilogo		
60	$a^6b^8 - 81$	$R: (a^3b^4 - 9)(a^3b^4 + 9)$

Scomposizione di polinomi

61	$x^2 + 6a - 2ax - 9$	$R: (x - 3)(x + 3 - 2a)$
62	$\frac{m^3}{8} + n^9$	$R: \left(\frac{m}{2} + n^3\right)\left(\frac{m^2}{4} - \frac{1}{2}mn^3 + n^6\right)$
63	$6a^4 + 5a^2b^2 - 6b^4$	$R: (3a^2 - 2b^2)(2a^2 + 3b^2)$
64	$a^2b^2 + x^2y^2 + 2abxy$	$R: (ab + xy)^2$
65	$(2x - 3)^3 - x(2x - 3)^2 + 3(2x - 3)^2$	$R: x(2x - 3)^2$
66	$2a^4 - 7a^3 + 15 - 17a^2 + 7a$	$R: (a - 1)(a + 1)(2a + 3)(a - 5)$
67	$x^{16} - 1$	$R: (x^8 + 1)(x^4 + 1)(x^2 + 1) \times (x + 1)(x - 1)$
68	$3xy + x^2y - 7xy^2$	$R: xy(3 + x - 7y)$
69	$2x^2 - 3x - 2$	$R: (2x + 1)(x - 2)$
70	$m^6 - n^6$	$R: (m - n)(m + n) \times (m^2 - mn + n^2)(m^2 + mn + n^2)$
71	$25 - \frac{x^2}{9}$	$R: \left(5 - \frac{x}{3}\right)\left(5 + \frac{x}{3}\right)$
72	$2a^3b^3 - a^4 - a^2b^6$	$R: -a^2(a - b^2)^2$
73	$x^{10} + x^9 + x^8 + x^7$	$R: x^7(x + 1)(x^2 + 1)$
74	$m^2 - (n + bm)^2$	$R: (m - n - bm)(m + n + bm)$
75	$a^3 + 32a + 15a^2 - 48$	$R: (a - 1)(a + 4)(a + 12)$
76	$(x + y)^3 + 1$	$R: (x + y + 1) \times [(x + y)^2 - (x + y) + 1]$
77	$12x^3 + 4xy - 6x^2 - 2y$	$R: 2(2x - 1)(3x^2 + y)$
78	$25x^4 - 30x^2y + 9y^2$	$R: (5x^2 - 3y)^2$
79	$9a^3 + 18a^2 - a - 2$	$R: (a + 2)(3a + 1)(3a - 1)$
80	$b^3 - a^6$	$R: (b - a^2)(b^2 + a^2b + a^4)$
81	$2x^2 + xy - y^2$	$R: (2x - y)(x + y)$

Scomposizione di polinomi

82	$-a^2 + 2a - 1$	$R: -(a - 1)^2$
83	$m^4 + 17m^2 + 10m + 16 + 10m^3$	$R: (m + 2)(m + 8)(m^2 + 1)$
84	$a^2 + 3ab - 10b^2$	$R: (a - 2b)(a + 5b)$
esercizi più impegnativi		
85	$a^2 - 1 + a^2x - x$	$R: (a - 1)(a + 1)(1 + x)$
86	$4a^2b^2 - (a^2 + b^2 - 4)^2$	$R: (2 - a - b)(2 + a + b)^2 \times (a + b - 2)$
87	$a^2 - 4 + 3a(a - 2)$	$R: 2(a - 2)(2a + 1)$
88	$2x^4 - 32$	$R: 2(x^2 + 4)(x - 2)(x + 2)$
89	$a^3 - 8 + 5(a^2 + 2a + 4)$	$R: (a^2 + 2a + 4)(a + 3)$
90	$(x + 2y)^2 - 4y(x + 2y) + 4y^2$	$R: x^2$
91	$16 - x^2 + 2xy - y^2$	$R: (4 - x + y)(4 + x - y)$
92	$(x - 3)^2 - 4(x - 3)$	$R: (x - 3)(x - 7)$
93	$4a^2b^2 - (ab - a^2)^2$	$R: a^2(a + b)(3b - a)$
94	$x^3 + 9y^2 + x^2 + 9xy^2$	$R: (x + 1)(x^2 + 9y^2)$
95	$3x^6 - 192$	$R: 3(x - 2)(x^2 + 2x + 4) \times (x + 2)(x^2 - 2x + 4)$
96	$x^3 - 6x^2 - x + 30$	$R: (x - 5)(x - 3)(x + 2)$
97	$ax^3 - 3bx^3 + 3b - a$	$R: (a - 3b)(x - 1)(x^2 + x + 1)$
98	$(2x - 1)^2 - 9x^2$	$R: -(x + 1)(5x - 1)$
99	$a^2 + b^2 + 2ab - ax - bx$	$R: (a + b - x)(a + b)$
100	$5a^6 + 5a$	$R: 5a(a + 1) \times (a^4 - a^3 + a^2 - a + 1)$
101	$4z^3 - 7y^2z + 3y^3$	$R: (z + y)(2z - 3y)(2z + y)$
102	$x^6 - y^6 + 2x^2 - 2y^2$	$R: (x + y)(x - y) \times (x^4 + x^2y^2 + y^4 + 2)$

Scomposizione di polinomi

103	$3x^4 + 6x^3 + 9x^2 + 18x$	$R: 3x(x+2)(x^2+3)$
104	$(a+4b)^2 + 2(a+4b)(a-b) + (a-b)^2$	$R: (2a+3b)^2$
105	$2x^5 - 32$	$R: 2(x^5 - 16)$
106	$y^3 - 3xy^2 + 5x^2y - 3x^3$	$R: (y-x)(y^2 - 2xy + 3x^2)$
107	$x^6 + 2x^3 + 1$	$R: (x+1)^2(x^2 - x + 1)^2$
108	$x^5 - 6x^4 + 12x^3 - 8x^2$	$R: x^2(x-2)^3$
109	$x^6 - y^6 + x^3 - y^3$	$R: (x-y)(x^2 + xy + y^2) \times (x^3 + y^3 + 1)$
110	$3x(4-x^2) - 2x + x^2$	$R: x(2-x)(3x+5)$
111	$4(a-5b)^2 - a^2$	$R: (a-10b)(3a-10b)$
112	$a^2 - 4a + 4 + ab - 2b$	$R: (a-2)(a-2-b)$
113	$x^2 - y^2 + ax^2 - 2axy + ay^2$	$R: (x-y)(x+y+ax-ay)$
114	$256 - (x-y)^4$	$R: (4-x+y)(4+x-y) \times [16 + (x-y)^2]$
115	$(x+2y-1)^2 - 1$	$R: (x+2y-2)(x+2y)$
116	$x^4 - y^4 + 3ax^2 - 3ay^2$	$R: (x+y)(x-y)(x^2 + y^2 + 3a)$
117	$a(a-2b)(a-b) - 2b(a+2b)(a-b)$	$R: (a-b)(a^2 - 4ab - 4b^2)$
118	$a^6 + 16a^3 + 64$	$R: (a+2)^2(a^2 - 2a + 4)^2$
119	$a^2 + 4a - 21 + ax - 3x$	$R: (a-3)(a+7+x)$
120	$x^5 - x - 2x^4 + 2$	$R: (x^2+1)(x+1)(x-1)(x-2)$
121	$(a^2-9)^2 + a^2 - 6a + 9$	$R: (a-3)^2[(a+3)^2 + 1]$
122	$x^3 + 3x^2 - 6x - 8$	$R: (x+1)(x-2)(x+4)$
123	$x^3 - 3x^2 + 3x - 1 + xy - y$	$R: (x-12)[(x-1)^2 + y]$
124	$27x^4 + \frac{xy^3}{8}$	$R: x\left(3x - \frac{y}{2}\right)\left(9x^2 + \frac{3}{2}xy + \frac{y^2}{4}\right)$