

Operazioni con i polinomi

somma algebrica di polinomi		
1	$(3 - a + a^2) + (3 + 2a - 2a^2)$	$R: -a^2 + a + 6$
2	$(3 - a + a^2) - (3 + 2a - 2a^2)$	$R: -3a + 3a^2$
3	$-(3 - a + a^2) - (3 + 2a - 2a^2)$	$R: -6 - a + 2a^2$
4	$\left(2x^3 - \frac{8}{3}x^2 + \frac{1}{4}x + 1\right) - \left(\frac{1}{5}x^3 - \frac{5}{2}x^2 + x + 1\right)$	$R: \frac{9}{5}x^3 - \frac{1}{6}x^2 - \frac{3}{4}x$
5	$(3x^2b^3 + 7x^2 - b^2) - (+8x^2 - 4x^2b^3 + b^2)$	$R: 7x^2b^3 - x^2 - 2b^2$
6	$\left(\frac{1}{3}a^2 + a - 5\right) + \left(\frac{2}{3}a^2 - a\right) - (a^2 - 3a + 1)$	$R: 3a - 6$
7	$[2x - (a - b)] + (3a + b) - (2a + 3b)$	$R: 2x - b$
8	$-\frac{2}{3}a - \left\{-\left[\frac{1}{2}b - \left(2a - \frac{1}{6}\right)\right] + b - \frac{1}{3}a\right\}$	$R: \frac{1}{6} - \frac{7}{3}a - \frac{1}{2}b$
9	$(0, \bar{6}m^2 - m) - (m^2 - 3m + 1) - \left(\frac{1}{3}m^2 + m - 5\right)$	$R: 4 + m - \frac{2}{3}m^2$
10	$[-(a^2b^2c + 3ab^2c) + (7ab^2c + 8a^2b^3c) + a^2b^2c] - 3a^2b^3c + -(-ab^2c + 5a^2bc)$	$R: 5ab^2c - 5a^2bc + 5a^2b^3c$

prodotto di un polinomio per un monomio		
11	$(2x^2 + 3ax - b^2) \cdot (-4ab)$	$R: -8abx^2 - 12a^2bx + 4ab^3$
12	$(a^2 - 3x + 2) \cdot 3x$	$R: 3a^2x - 9x^2 + 6x$
13	$\frac{1}{2}b^2x^3 \cdot (-2x + 4b - 6x^2 + 8b^2)$	$R: -b^2x^4 + 2b^3x^3 - 3b^2x^5 + 4b^4x^3$
14	$-0,5xy \cdot (xy + 4x^2y + 4xy^2 - 0, \bar{6}x^2y^2)$	$R: -\frac{1}{2}x^2y^2 - 2x^3y^2 - 2x^2y^3 + \frac{1}{3}x^3y^3$
15	$\left(-\frac{2}{3}m^2n + 0, \bar{3}m^2n^2 - \frac{2}{3}mn^2t^2\right) \cdot (3m^2n^2t^3)$	$R: -2m^4n^3t^3 + m^4n^4t^3 - 2m^3n^4t^5$
16	$2b^2x^3 \cdot (0,5b + 0,25x - 0,1\bar{6}x^2 - 0,125b^2)$	$R: b^3x^3 + \frac{1}{2}b^2x^4 - \frac{1}{3}b^2x^5 + -\frac{1}{4}b^4x^3$
17	$7a^2b^2 \left(-\frac{4}{7}b + \frac{5}{7}a\right) + (-a^2b)(5ab - 4b^2 + 8a^2)$	$R: -8a^4b$

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18	$(mn + 5n^2 - \frac{1}{3}mn^3)(3m^2n) - (\frac{1}{5}m - n - mn) \cdot 15m^2n^2$	R: $15n^3n^3 - m^3n^4 + 30m^2n^3$
19	$a^2 \cdot (2a - 3b) \cdot 5b - \frac{1}{2} \cdot (ab - 4b^2) \cdot a^2 - (-\frac{1}{2}a^3b)$	R: $10a^3b - 13a^2b^2$
20	$\frac{x^2}{2}(x - y + 1) - \frac{2}{3}x(-x^2 + x) - x^2(y - 3) - \frac{23}{6}x^2$	R: $\frac{7}{6}x^3 - x^2 - \frac{3}{2}x^2y$
21	$xy(x^2 - y^3) - (2xy^2 + x)x^2y + (x^2 - 2y)\left(-\frac{xy^3}{2}\right)$	R: $-\frac{5}{2}x^3y^3$
22	$\left[\frac{1}{3}a^2\left(\frac{4}{3}a - b\right) - \frac{1}{4}a(a^2 - 2ab)\right]\left(-\frac{3}{4}ab\right) - b^2\left(\frac{1}{24}a^3 - a^2b\right) + \frac{1}{3}ab\left(a^3 + \frac{1}{2}a^2b\right)$	R: $\frac{3}{16}a^4b + a^2b^3$
23	$(2 + x)\left\{-\left[2xy\left(\frac{1}{2}x - \frac{3}{4}y\right)\right] + x^2y\right\}^2 - 9x^2y^4\left(\frac{1}{4}x + \frac{1}{2}\right)$	R: 0
24	$a\left\{a^3 - \left[(-4a^2 + 5b^2 + 2ab) \cdot (-a) + \left(\frac{5}{2}b + a\right) \cdot 2ab\right]\right\}$	R: $-3a^4$
25	$\left\{x^2 - \left[3y\left(x - \frac{y}{9}\right) - \frac{2}{3}x\left(y - \frac{3}{4}x\right)\right]\right\} \cdot \left(-\frac{2}{3}x\right) - \frac{1}{9}x(-2xy + 2y^2 - 3x^2)$	R: $\frac{16}{9}x^2y - \frac{4}{9}xy^2$
26	$a^2\left(a + \frac{1}{3}\right) + \left(-\frac{3}{5}a - \frac{3}{2}a^2 + \frac{1}{5}a^3\right)\left(\frac{5}{9}a\right) + \frac{1}{3}\left(a + \frac{1}{9}a^4\right) - \frac{4}{27}a^4 + -2a\left(a^2 + \frac{1}{6}\right)$	R: $-\frac{11}{6}a^3$
27	$\left[(-5a^2 + 2b^2)ab + \left(\frac{5}{2}a^2b - b^3\right) \cdot (2a)\right]^0$	R: 1
28	$(y - x - 2)(-y) - 2(-2y) + (x - 2y + 3)\left(\frac{1}{2}x\right) + 2y(1 + y) + -\frac{1}{4}x(2 + 2x)$	R: $x + y^2$
29	$x^2y^2 + \left[xy\left(\frac{x}{2} + \frac{3}{2}y + 1\right) - x\left(xy + \frac{3}{2}y^2 + y\right)\right]^2 xy - \frac{1}{4}x^5y^3$	R: x^2y^2

prodotto di polinomi

30	$(2 - a)(a + 3)$	R: $6 - a - a^2$
31	$(x + 3)(x - 4)$	R: $x^2 - x - 12$
32	$\left(a + \frac{1}{2}\right)(2b - 6)$	R: $2ab - 6a + b - 3$

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33	$(2a^2 + b^3)(a^3 + 2b^2)$	$R: 2a^5 + 4a^2b^2 + a^3b^3 + 2b^5$
34	$\left(x - \frac{1}{3}\right)(3y - 6)$	$R: 3xy - 6x - y + 2$
35	$(a - 2)(a + 2)$	$R: a^2 - 4$
36	$(a + b + c)(a + b - c)$	$R: a^2 + b^2 + 2ab - c^2$
37	$(x - y)(x^2 + xy + y^2)$	$R: x^3 - y^3$
38	$(5a - b + 3c)(5a + b - 3c)$	$R: 25a^2 - b^2 + 6bc - 9c^2$
39	$(x + 1)(x - 2)(x + 3)$	$R: x^3 + 2x^2 - 5x - 6$
40	$(a + b)(a^2 - ab + b^2)(a^3 - b^3)$	$R: a^6 - b^6$
41	$(1 - a)(1 + a + a^2)(1 + a^3 + a^6)$	$R: 1 - a^9$
42	$(a - 2)(a + 2)$	$R: a^2 - 4$
43	$3x^2(3 + x^2) - (x^2 - 1)(x^2 - 2) - 2[(x^2 + 1)(x^2 + 2) - 3]$	$R: 6x^2$
44	$(1 + x - x^3)(5 + x^3) - (1 - x^3)(1 + x + x^2)(1 - x + x^2) - 4(1 - x^3) + -5x(1 - x^3)$	$R: 6x^4$
45	$2(3x + 1)(2x - 1) - 2(6x + 1)(x + 2) + (-3x)^2 - 5(4x + 1)$	$R: 9x^2 - 11 - 48x$
46	$5a(a^2x) - ax^2(-14a - 9x) + (0, \bar{3}a + 0,6x)(a + x)(-15ax)$	$R: 9ax^3 - 9a^3x$
47	$(a + 2) \left\{ \left[6a^2b - 3ab \left(2a - \frac{1}{3}b \right) + b^2 \right] \cdot b^2 - 3ab^3 \left(\frac{1}{3}ab + b \right) \right\}$	$R: 2b^4$
48	$\left[\left(\frac{3}{2}ab^2 - 0,2a^2b \right) \left(2a + \frac{20}{3}b \right) - (10b^2 - 0,4a^2)ab + \frac{4}{3}a^2b^2 \right]^2$	$R: 9a^4b^4$

divisione di un polinomio per un monomio

49	$(12a^4y^5 - 4a^3y^2 + 8ay^4): (-4ay^2)$	$R: -3a^3y^3 + a^2 - 2y^2$
50	$(8x^2y^3 - 6xy^2 + 4xy): (-2xy)$	$R: -4xy^2 + 3y - 2$

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51	$\left(\frac{3}{2}p^6q - 6p^5q - 4p^3pq^4 + \frac{5}{6}p^5q^2 - \frac{3}{8}p^3q^3\right) : \left(\frac{1}{4}p^3q\right)$	$R: 6p^3 - 24p^2 - 16pq^3 + \frac{10}{3}p^2q - \frac{3}{2}q^2$
52	$[(2x + z^2)(x^3z - z^2) : z + z^3] : x - 2x(x^3 + z) - z(x^2z - 2 - 2x)$	$R: 2x^3 - 2x^4$
53	$[(1 - a)(1 + a + a^2)(1 + a^3) - 1] : (-a)^5$	$R: a$
54	$\left\{2a^4 \left[b \left(\frac{1}{8}b + a\right) + 16a \left(\frac{1}{8}a - \frac{1}{16}b\right)\right] : a^2 + a^2 \left(a^2 - \frac{1}{4}b^2\right)\right\} : (-5a^4)$	$R: -1$
55	$\left\{\left[\left(2m^2n^3 - \frac{1}{4}m^5\right)(-8m) + 2(1 + 2mn)(1 - 2mn + 4m^2n^2)\right] : 2\right\} : \frac{1}{2}$	$R: 2m^6 + 2$
56	$\left\{\left[\left(3m^2 - \frac{1}{2}n\right)(3 + 2x) + nx - 9m^2\right](2m^2x - 2n) \pm m^2x(12m^2x - 15n)\right\} : 3n^2$	$R: 1$
57	$\left[2\left(3 + x + \frac{1}{2}y\right)(x + 3y - 4) - \left(y + \frac{14}{3}\right)3y + 2x(1 - x) - 4\right] : 7$	$R: xy - 4$

esercizi di riepilogo

58	$\left[4(2a - b)\left(a - \frac{1}{3}b\right) + 2(b - 2a + 1)\left(2a - \frac{2}{3}b - 1\right) + 2\left(\frac{5}{3}b - 4a + 1\right)\right]^3 - 4$	$R: -4$
59	$(m^2 + n^2)[(1,5m - 0,6n)(0,6m + 1,5n) - 1,805mn] - (-m^2)^2$	$R: -n^4$
60	$\left\{\left[\left(\frac{1}{2}x + y\right)\left(\frac{y}{3} - x\right)2 + \frac{4}{3}xy\right]\left(\frac{2}{3}y^2 + x^2\right) + \left(\frac{5}{9}y^4 + x^4 + \frac{1}{3}x^3y\right)\right\} : 2(-y)^3$	$R: \frac{1}{9}x - \frac{1}{2}y$
61	$2\left(a^3 + \frac{1}{4}\right)\left(\frac{1}{16} - a^3\right) + \left[\left(a - \frac{1}{2}\right)\left(a^4 + \frac{1}{2}a^3 + \frac{1}{4}a^2\right)\left(a^3 + \frac{1}{8}\right)\right] : \left(\frac{1}{2}a^2\right)$	$R: -\frac{3}{8}a^3$
62	$\left[\left(-\frac{2}{3}ax\right)^2 + \frac{1}{2}ax\left(\frac{4}{3}a + \frac{5}{2}x\right) + a\left(\frac{2}{3}ax - \frac{5}{4}x^2\right)\right] : (-ax)$	$R: -\frac{4}{9}ax - \frac{4}{3}a$
63	$\left\{\left[(m + 2)(m - 1) + 2\right](m^2 + m - 1) + m\right\}\left(-\frac{1}{2}m\right)^2 - \left(-\frac{1}{2}m^3\right)^2$	$R: \frac{1}{2}m^5$
64	$\left[\left(\frac{1}{2}x + \frac{2}{3}y^2\right)(6x - 18y^2) - 4\left(x^2 - \frac{39}{16}y^4\right) + \left(x + \frac{9}{2}y^2\right)\left(x + \frac{1}{2}y^2\right)\right] : xy$	$R: 0$