

## 第六章 多项式与乘法公式

### 题型 1 加减

- 只能以同类项加减

例子

$$\begin{aligned} & (2f^2-1)+(-f)^2 \\ &= 2f^2-1+f^2 \\ &= f^2-1 \end{aligned}$$

### 题型 2 乘除

- $a^m \times a^n = a^{m+n}$
- $(ab)^n = a^n b^n$
- $(a^m)^n = a^{mn}$

例子

$$\begin{aligned} & -4x(2x^2+3x-1) \\ &= -8x^3-12x^2+4x \end{aligned}$$

例子

$$\begin{aligned} & (x+b)(-3x+7b) \\ &= -3x^2+7xb-3xb+7b^2 \\ &= -3x^2+4xb+7b^2 \end{aligned}$$

$$a^m \div a^n = \frac{a^m}{a^n} = a^{m-n}$$

例子

$$\begin{aligned} & 21x^3 \div (-7x^2) \\ &= \frac{21x^3}{-7x^2} \\ &= -3x \end{aligned}$$

例子

$$\begin{aligned} 2x^2+9x+10 \div (x+2) &= 2x+5 \\ & \quad 2x+5 \end{aligned}$$

$$\begin{array}{r} x+2 \overline{) 2x^2+9x+10} \\ \underline{2x^2+4x} \phantom{+10} \\ 5x+10 \\ \underline{5x+10} \\ 0 \end{array}$$

平方差公式

$$(a+b)(a-b) = a^2 - b^2$$

例子

$$(2x+3)(2x-3) = 4x^2 - 9$$

完全平方公式

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

例子

$$(x+2y)^2$$

$$x = a, 2y = b$$

$$= (x)^2 + 2(x)(2y) + (y)^2$$

$$= x^2 + 4xy + 4y^2$$

例子

$$\begin{aligned} 101^2 &= (100+1)^2 = (100)^2 + 2(100) \\ & \quad (1) + 1^2 \end{aligned}$$

$$= 10201$$

练习

1	$(4b^2 + 3b + 2) - (9b^2 - 7b)$
2	$(3x + 5) + (5x - 9)$
3	$(7b + 3c) + (-8b + 5c)$
4	$y^2 - 2[4y^2 + 6(y - 3) - 4(2y - 1)]$
5	$7ab - 3a^2b^2 + 7 + 8ab^2 + 3a^2b^2 - 3 - 7ab$
6	$(4xy + 5y^2) - (3xy - 2y^2) - (xy + 3y^2)$
7	$2(x^2 + 1) + 4(x^2 - 1)$
8	$(2x^2 + xy + 3y^2) - (x^2 - xy + 2y^2)$
9	$(7a^2 - 5) - (4a - 3) + (2a + 1)$
10	$(x^2 - 3x) + (5x + 2) - (x^2 + 3)$
11	$3x + [2x + 3y - (4x - 7y)]$
12	$7a + [4a - 6b - (8a + 2b)]$
13	$4x - (6x - 2y) + (2x - 7y)$
14	$a + (3a - 2b) - (4a - 3b)$
15	$(7x^3y^2 + 3x^4) - (5x^3y^2 - 2x)$
16	$(x^2 - 2x)(3x - 4) =$
17	$(3x - 2y)(2x - 3y) =$
18	$(x + y)^3 =$
19	$(x^3 - 2x + 1) \div (x - 1) =$
20	$4x^3 + 9x^2 - 10x - 3 \div (x + 3) \div (x - 1) =$

21	$x^3 - 2x^2 + x \div (x - 1) =$
22	$(x^3 - x) \div (x - 1) =$
23	$(x^4 + x) \div (x + 1) =$
24	$(6x^3 - x^2 - 14x + 3) \div (2x - 3) =$
25	$a(-5a) - (-7a^2) + (-10a^3) \div (-2a) =$
26	$x^4 - 2x^2 + 1 \div (x - 1) =$
27	$x^3 + 4x^2 + 9x + k \div (x - 2), k = ?$
28	$2x^4 - x^3 - 2x^2 + 9x \div (2x - 1) =$
29	$2x^3 + 4x - 45 \div (x + 6) =$
30	$(15 + 3a - 7a^2 - 4a^3) \div 5 - 4a =$
31	$y^2 - 13y + 36 \div y - 4 =$
32	$18x^3 + 4x^2 - 12x \div 3x =$
33	$(36x^5y^2 + 12x^3y^4 - 48x^2y) \div 6x^2y =$
34	$(4c^2d - 8c^3d^2) \div (-2cd) =$
35	$6x^3 + 3x^2 - 3x \div -3x =$
36	$(ab + ac) \div a =$
37	$(ab)^5 \div (2ab)^2 =$
38	$(6ab + 5b) \div b =$
39	$12a^3b^2 \div (-12a^3b^2) =$
40	$6ab^3 \div 2ab =$
41	$35y^3 \div 7y^2 =$

42	$3a^2 \div 6a^2 =$
43	$(0.05)^3 \div 0.2 =$
44	$x + y = p, xy = q, (x + y)^2 =$
45	$x(x + 1)(x - 3)(x + 2) =$
46	$-3\left(\frac{1}{3}a - \frac{2}{3}(1 - a)\right) =$
47	$(6n^2 - 6n - 5)(7n^2 + 6n - 5) =$
48	$(7r^2 - 6r - 6)(2r - 4) =$
49	$(n^2 + 6n - 4)(2n - 4) =$
50	$(7k - 3)(k^2 - 2k + 7) =$
51	$(4a + 2)(6a^2 - a + 2) =$
52	$(8p - 2)(6p + 2) =$
53	$(4p - 1)^2 =$
54	$(x - 3)(6x - 2) =$
55	$(4n + 1)(2n + 6) =$
56	$(2n + 2)(6n + 1) =$
57	$2x(-2x - 3) =$
58	$-4(v + 1) =$
59	$(-3)^2 \times (-2)^3 \times \left(-\frac{1}{12}\right) =$
60	$6v(2v + 3) =$
61	$(ab^2)^3(ab^4) =$

62	$(3x^2 - x + 5)(x^2 + 3x) =$
63	若 $x + y = p, xy = q$ , 以 p,q 表示 a. $x^2 + y^2$ b. $x^3 + y^3$
64	$x^3 + 4x^2 + 9x + k \div (x - 2)$ 能除得尽, 求 k
65	若 $x - y = 10, x^2 + y^2 = 120, xy$ 的值为?
66	若 $x^2 + y^2 = 41, xy = 20, (x + y)^2$ 的值?
67	若 $x - \frac{1}{x} = \sqrt{3}, \frac{x^4 + 1}{x^2} =$
68	若 $a^2 + b^2 = 2, ab = 3, (a + b)^4$ 的值
69	展开 $(2a + 3b + c)^2$
70	若 $(x^3 - 4)(x^3 + 4) = x^m + 16, m =$