因数分解②

1 解答 (1) $(x+2)(x+4)$ (2) $(x-3)(x-4)$ (3) $(x+3)(x+9)$ (4) $(x-4)(x-6)$

(1) $x^2+6x+8=x^2+(2+4)x+2\times4$
$=(x+2)(x+4)$

(2) $x^2-7x+12=x^2+\{(-3)+(-4)\}x+(-3)\times(-4)$
$=(x-3)(x-4)$

(3) $x^2+12x+27=x^2+(3+9)x+3\times9$
$=(x+3)(x+9)$

(4) $x^2-10x+24=x^2+\{(-4)+(-6)\}x+(-4)\times(-6)$
$=(x-4)(x-6)$

2 解答 (1) $(x+1)(x-5)$ (2) $(x+7)(x-1)$ (3) $(x+4)(x-2)$ (4) $(x+3)(x-5)$
(5) $(y+7)(y-2)$ (6) $(a+3)(a-10)$

(1) $x^2-4x-5=x^2+\{1+(-5)\}x+1\times(-5)$
$=(x+1)(x-5)$

(2) $x^2+6x-7=x^2+\{7+(-1)\}x+7\times(-1)$
$=(x+7)(x-1)$

(3) $x^2+2x-8=x^2+\{4+(-2)\}x+4\times(-2)$
$=(x+4)(x-2)$

(4) $x^2-2x-15=x^2+\{3+(-5)\}x+3\times(-5)$
$=(x+3)(x-5)$

(5) $y^2+5y-14=y^2+\{7+(-2)\}y+7\times(-2)$
$=(y+7)(y-2)$

(6) $a^2-7a-30=a^2+\{3+(-10)\}a+3\times(-10)$
$=(a+3)(a-10)$

3 解答 (1) $(x+1)^2$ (2) $(x-5)^2$ (3) $(x+2)(x-2)$ (4) $(y+7)(y-7)$

(1) $x^2+2x+1=x^2+2\times1\times x+1^2$
$=(x+1)^2$

(2) $x^2-10x+25=x^2-2\times5\times x+5^2$
$=(x-5)^2$

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

(4) $y^2-49=y^2-7^2$
$=(y+7)(y-7)$

4 解答 (1) $(x+7)^2$ (2) $(x-8)^2$ (3) $(x+10)(x-10)$ (4) $\left(y-\frac{1}{2}\right)^2$
(5) $\left(a+\frac{1}{4}\right)\left(a-\frac{1}{4}\right)$ (6) $(3+t)(3-t)$

(1) $x^2+14x+49=x^2+2\times7\times x+7^2$
$=(x+7)^2$

(2) $x^2-16x+64=x^2-2\times8\times x+8^2$
$=(x-8)^2$

(3) $x^2-100=x^2-10^2$
$=(x+10)(x-10)$

(4) $y^2-y+\frac{1}{4}=y^2-2\times\frac{1}{2}\times y+\left(\frac{1}{2}\right)^2$
$=\left(y-\frac{1}{2}\right)^2$

(5) $a^2-\frac{1}{16}=a^2-\left(\frac{1}{4}\right)^2$
$=\left(a+\frac{1}{4}\right)\left(a-\frac{1}{4}\right)$

(6) $9-t^2=3^2-t^2$
$=(3+t)(3-t)$
$[9-t^2=-(t^2-9)=-(t+3)(t-3)$ としてもよい$]$

5 解答 (1) $(x-5y)(x-6y)$ (2) $(x+3y)(x+7y)$ (3) $(x+5y)(x-8y)$
(4) $(x-3y)(x-6y)$ (5) $(x-3y)(x-4y)$ (6) $(x-2y)(x+10y)$
(7) $(x-y)(x-2y)$ (8) $(x+2y)(x+4y)$ (9) $(x+4y)(x-6y)$
(10) $(a+2b)(a-3b)$ (11) $(m-3n)(m+9n)$ (12) $(p+4q)(p-5q)$
(13) $(s-3t)(s-4t)$ (14) $(a+7b)(a-12b)$ (15) $(m-6n)(m-8n)$

(1) $x^2-11xy+30y^2=(x-5y)(x-6y)$

(2) $x^2+10xy+21y^2=(x+3y)(x+7y)$

(3) $x^2-3xy-40y^2=(x+5y)(x-8y)$

(4) $x^2-9xy+18y^2=(x-3y)(x-6y)$

(5) $x^2-7xy+12y^2=(x-3y)(x-4y)$

(6) $x^2+8xy-20y^2=(x-2y)(x+10y)$

(7) $x^2-3xy+2y^2=(x-y)(x-2y)$

(8) $x^2+6xy+8y^2=(x+2y)(x+4y)$

(9) $x^2-2xy-24y^2=(x+4y)(x-6y)$

(10) $a^2-ab-6b^2=(a+2b)(a-3b)$

(11) $m^2+6mn-27n^2=(m-3n)(m+9n)$

(12) $p^2-pq-20q^2=(p+4q)(p-5q)$

(13) $s^2-7st+12t^2=(s-3t)(s-4t)$

(14) $a^2-5ab-84b^2=(a+7b)(a-12b)$

(15) $m^2-14mn+48n^2=(m-6n)(m-8n)$