

1 解答 (1)  $x^2 + 2xy + y^2 + x + y - 20$  (2)  $x^2 - 2xy + y^2 + 6x - 6y + 9$

(3)  $a^2 - 2ab + b^2 - 8a + 8b + 12$

(1)  $x + y$  を  $M$  とおくと

$$\begin{aligned}(x+y-4)(x+y+5) &= (M-4)(M+5) \\ &= M^2 + M - 20 \\ &= (x+y)^2 + (x+y) - 20 \\ &= x^2 + 2xy + y^2 + x + y - 20\end{aligned}$$

(2)  $x - y$  を  $M$  とおくと

$$\begin{aligned}(x-y+3)^2 &= (M+3)^2 \\ &= M^2 + 6M + 9 \\ &= (x-y)^2 + 6(x-y) + 9 \\ &= x^2 - 2xy + y^2 + 6x - 6y + 9\end{aligned}$$

(3)  $a - b$  を  $M$  とおくと

$$\begin{aligned}(a-b-2)(a-b-6) &= (M-2)(M-6) \\ &= M^2 - 8M + 12 \\ &= (a-b)^2 - 8(a-b) + 12 \\ &= a^2 - 2ab + b^2 - 8a + 8b + 12\end{aligned}$$

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

(3)  $a^2 + 2ab + b^2 - 5a - 5b + 4$  (4)  $a^2 + 4ab + 4b^2 - 1$

(1)  $x + y$  を  $M$  とおくと

$$\begin{aligned}(x+y+1)(x+y+3) &= (M+1)(M+3) \\ &= M^2 + 4M + 3 \\ &= (x+y)^2 + 4(x+y) + 3 \\ &= x^2 + 2xy + y^2 + 4x + 4y + 3\end{aligned}$$

(2)  $x - y$  を  $M$  とおくと

$$\begin{aligned}(x-y+1)^2 &= (M+1)^2 \\ &= M^2 + 2M + 1 \\ &= (x-y)^2 + 2(x-y) + 1 \\ &= x^2 - 2xy + y^2 + 2x - 2y + 1\end{aligned}$$

(3)  $a + b$  を  $M$  とおくと

$$\begin{aligned}(a+b-1)(a+b-4) &= (M-1)(M-4) \\ &= M^2 - 5M + 4 \\ &= (a+b)^2 - 5(a+b) + 4 \\ &= a^2 + 2ab + b^2 - 5a - 5b + 4\end{aligned}$$

(4)  $a + 2b$  を  $M$  とおくと

$$\begin{aligned}(a+2b+1)(a+2b-1) &= (M+1)(M-1) \\ &= M^2 - 1 \\ &= (a+2b)^2 - 1 \\ &= a^2 + 4ab + 4b^2 - 1\end{aligned}$$

3 解答 (1)  $x^2 - x - 5$  (2)  $2x - 9$  (3)  $2x^2 - 11$  (4)  $10a^2 - 16ab - 17b^2$

(1)  $(x+1)^2 - 3(x+2) = x^2 + 2x + 1 - 3x - 6$   
 $= x^2 - x - 5$

(2)  $(x-1)(x+9) - x(x+6) = x^2 + 8x - 9 - x^2 - 6x$   
 $= 2x - 9$

(3)  $(x+2)(x-8) + (x+1)(x+5) = x^2 - 6x - 16 + x^2 + 6x + 5$   
 $= 2x^2 - 11$

(4)  $(3a-2b)^2 + (a+3b)(a-7b) = 9a^2 - 12ab + 4b^2 + a^2 - 4ab - 21b^2$   
 $= 10a^2 - 16ab - 17b^2$