

$$\boxed{1} \text{ 解答 (1) } x^2 + 2xy + y^2 + x + y - 20 \quad (2) x^2 - 2xy + y^2 + 6x - 6y + 9$$

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

(1) $x + y$ を M とおくと

$$(x + y - 4)(x + y + 5) = (M - 4)(M + 5)$$

$$= M^2 + M - 20$$

$$= (x + y)^2 + (x + y) - 20$$

$$= x^2 + 2xy + y^2 + x + y - 20$$

(2) $x - y$ を M とおくと

$$(x - y + 3)^2 = (M + 3)^2$$

$$= M^2 + 6M + 9$$

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

$$= x^2 - 2xy + y^2 + 6x - 6y + 9$$

(3) $a - b$ を M とおくと

$$(a - b - 2)(a - b - 6) = (M - 2)(M - 6)$$

$$= M^2 - 8M + 12$$

$$= (a - b)^2 - 8(a - b) + 12$$

$$= a^2 - 2ab + b^2 - 8a + 8b + 12$$

$$\boxed{2} \text{ 解答 (1) } x^2 + 2xy + y^2 + 4x + 4y + 3 \quad (2) x^2 - 2xy + y^2 + 2x - 2y + 1$$

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

(1) $x + y$ を M とおくと

$$(x + y + 1)(x + y + 3) = (M + 1)(M + 3)$$

$$= M^2 + 4M + 3$$

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

$$= x^2 + 2xy + y^2 + 4x + 4y + 3$$

(2) $x - y$ を M とおくと

$$(x - y + 1)^2 = (M + 1)^2$$

$$= M^2 + 2M + 1$$

$$= (x - y)^2 + 2(x - y) + 1$$

$$= x^2 - 2xy + y^2 + 2x - 2y + 1$$

(3) $a + b$ を M とおくと

$$(a + b - 1)(a + b - 4) = (M - 1)(M - 4)$$

$$= M^2 - 5M + 4$$

$$= (a + b)^2 - 5(a + b) + 4$$

$$= a^2 + 2ab + b^2 - 5a - 5b + 4$$

(4) $a + 2b$ を M とおくと

$$(a + 2b + 1)(a + 2b - 1) = (M + 1)(M - 1)$$

$$= M^2 - 1$$

$$= (a + 2b)^2 - 1$$

$$= a^2 + 4ab + 4b^2 - 1$$

$$\boxed{3} \text{ 解答 (1) } x^2 - x - 5 \quad (2) 2x - 9 \quad (3) 2x^2 - 11 \quad (4) 10a^2 - 16ab - 17b^2$$

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

$$= x^2 - x - 5$$

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

$$= 2x - 9$$

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

$$= 2x^2 - 11$$

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

$$= 10a^2 - 16ab - 17b^2$$