

式の計算 (式の値)

1 解答 (1) 10000 (2) 1600 (3) 5000

$$\begin{aligned} (1) \quad a^2 + 2ab + b^2 &= (a+b)^2 \\ &= (58+42)^2 \\ &= 100^2 \\ &= 10000 \end{aligned}$$

$$\begin{aligned} (2) \quad a^2 - b^2 &= (a+b)(a-b) \\ &= (58+42) \times (58-42) \\ &= 100 \times 16 \\ &= 1600 \end{aligned}$$

$$\begin{aligned} (3) \quad a^2 + ab - 8a - 8b &= a(a+b) - 8(a+b) \\ &= (a-8)(a+b) \\ &= (58-8) \times (58+42) \\ &= 50 \times 100 \\ &= 5000 \end{aligned}$$

2 解答 (1) 100 (2) 308 (3) -1100

$$\begin{aligned} (1) \quad x^2 - 2xy + y^2 &= (x-y)^2 \\ &= (20.4-10.4)^2 \\ &= 10^2 \\ &= 100 \end{aligned}$$

$$\begin{aligned} (2) \quad x^2 - y^2 &= (x+y)(x-y) \\ &= (20.4+10.4) \times (20.4-10.4) \\ &= 30.8 \times 10 \\ &= 308 \end{aligned}$$

$$\begin{aligned} (3) \quad 10y^2 - 10xy - 6x + 6y &= 10y(y-x) - 6(x-y) \\ &= 10y(y-x) + 6(y-x) \\ &= (10y+6)(y-x) \\ &= (10 \times 10.4 + 6) \times (10.4 - 20.4) \\ &= 110 \times (-10) \\ &= -1100 \end{aligned}$$

3 解答 (1) -9 (2)  $\frac{41}{2}$  (3)  $-\frac{231}{16}$

$$\begin{aligned} (1) \quad a^2b + ab^2 &= ab(a+b) \\ &= -\frac{9}{4} \times 4 = -9 \end{aligned}$$

$$\begin{aligned} (2) \quad a^2 + b^2 &= (a+b)^2 - 2ab \\ &= 4^2 - 2 \times \left(-\frac{9}{4}\right) = 16 + \frac{9}{2} = \frac{41}{2} \end{aligned}$$

$$\begin{aligned} (3) \quad (a^2-1)(b^2-1) &= a^2b^2 - a^2 - b^2 + 1 \\ &= (ab)^2 - (a^2 + b^2) + 1 \\ &= \left(-\frac{9}{4}\right)^2 - \frac{41}{2} + 1 \\ &= \frac{81}{16} - \frac{41}{2} + 1 = -\frac{231}{16} \end{aligned}$$

4 解答 (1)  $-\frac{64}{9}$  (2)  $\frac{91}{9}$

$$\begin{aligned} (1) \quad x^3y + 2x^2y^2 + xy^3 &= xy(x^2 + 2xy + y^2) \\ &= xy(x+y)^2 \\ &= (-1) \times \left(-\frac{8}{3}\right)^2 \\ &= -\frac{64}{9} \end{aligned}$$

$$\begin{aligned} (2) \quad x^2 + y^2 - xy &= \{(x+y)^2 - 2xy\} - xy \\ &= (x+y)^2 - 3xy \\ &= \left(-\frac{8}{3}\right)^2 - 3 \times (-1) \\ &= \frac{64}{9} + 3 \\ &= \frac{91}{9} \end{aligned}$$