

1 次の式を展開しなさい。

① $(2x + 5)(2x + 3)$

② $(4x + y)^2$

③ $(5x - 3y)^2$

④ $(6x + 4y)(6x - 4y)$

⑤ $(-2x - 5y)^2$

⑥ $(4 + 7x)(4 - 7x)$

2 次の式を工夫して計算しなさい。

① 108×92

② 198^2

③ 204^2

④ 99×102

1 次の式を展開しなさい。

$$\begin{aligned} \textcircled{1} \quad & (2x+5)(2x+3) \\ & = (2x)^2 + (5+3) \times 2x + 5 \times 3 \\ & = 4x^2 + 16x + 15 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & (4x+y)^2 \\ & = (4x)^2 + 2 \times y \times 4x + y^2 \\ & = 16x^2 + 8xy + y^2 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & (5x-3y)^2 \\ & = (5x)^2 - 2 \times 3y \times 5x + (3y)^2 \\ & = 25x^2 - 30xy + 9y^2 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & (6x+4y)(6x-4y) \\ & = (6x)^2 - (4y)^2 \\ & = 36x^2 - 16y^2 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad & (-2x-5y)^2 \\ & = (-2x)^2 - 2 \times 5y \times (-2x) + (5y)^2 \\ & = 4x^2 + 20xy + 25y^2 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad & (4+7x)(4-7x) \\ & = 4^2 - (7x)^2 \\ & = 16 - 49x^2 \end{aligned}$$

2 次の式を工夫して計算しなさい。

$$\begin{aligned} \textcircled{1} \quad & 108 \times 92 \\ & = (100+8)(100-8) \\ & = 100^2 - 8^2 \\ & = 10000 - 64 \\ & = 9936 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 198^2 \\ & = (200-2)^2 \\ & = 200^2 - 2 \times 2 \times 200 + 2^2 \\ & = 40000 - 800 + 4 \\ & = 39204 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad & 204^2 \\ & = (200+4)^2 \\ & = 200^2 + 2 \times 4 \times 200 + 4^2 \\ & = 40000 + 1600 + 16 \\ & = 41616 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad & 99 \times 102 \\ & = (100-1)(100+2) \\ & = 100^2 + \{(-1)+2\} \times 100 + (-1) \times 2 \\ & = 10000 + 100 - 2 \\ & = 10098 \end{aligned}$$