

# 3年・平方根後 1

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$$\textcircled{1} \quad -2+6$$

$$= 4$$

$$\textcircled{2} \quad -4 \times 9$$

$$= -36$$

$$\textcircled{3} \quad (49x^2y - 21xy) \div 7xy$$

$$\begin{aligned} &= \frac{49x^2y}{7xy} - \frac{21xy}{7xy} \\ &= 7x - 3 \end{aligned}$$

$$\textcircled{4} \quad 56x^2y \div 7xy \times 3y$$

$$\begin{aligned} &= \frac{56x^2y \times 3y}{7xy} \\ &= 24xy \end{aligned}$$

$$\textcircled{5} \quad (x+2)(x-2) - (x+1)(x-4)$$

$$\begin{aligned} &= x^2 - 4 - (x^2 - 3x - 4) \\ &= x^2 - 4 - x^2 + 3x + 4 \\ &= x^2 - x^2 + 3x - 4 + 4 \\ &= 3x \end{aligned}$$

$$\textcircled{6} \quad \frac{\sqrt{24}}{\sqrt{2}} + (\sqrt{3} - 2)^2$$

$$\begin{aligned} &= \sqrt{12} + \{(\sqrt{3})^2 - 4\sqrt{3} + 2^2\} \\ &= 2\sqrt{3} + 3 - 4\sqrt{3} + 4 \\ &= 7 - 2\sqrt{3} \end{aligned}$$

$$\textcircled{7} \quad \frac{1}{2}(3x+1) - \frac{1}{3}(x-5)$$

$$\begin{aligned} &= \frac{3(3x+1) - 2(x-5)}{6} \\ &= \frac{9x+3 - 2x+10}{6} \\ &= \frac{7x+13}{6} \end{aligned}$$

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# 3年・平方根後 2

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$$\textcircled{1} \quad -3-9$$

$$= -12$$

$$\textcircled{2} \quad -24 \div 3$$

$$= -8$$

$$\textcircled{3} \quad (54x^2y - 24xy) \div 6xy$$

$$\begin{aligned} &\div = \frac{54x^2y}{6xy} - \frac{24xy}{6xy} \\ &= 9x - 4 \end{aligned}$$

$$\textcircled{4} \quad 40x^2y \div 5xy \times 3y$$

$$\begin{aligned} &= \frac{40x^2y \times 3y}{5xy} \\ &= 24xy \end{aligned}$$

$$\textcircled{5} \quad (x+2)(x-4) - (x+3)(x-5)$$

$$\begin{aligned} &= x^2 - 2x - 8 - (x^2 - 2x - 15) \\ &= x^2 - 2x - 8 - x^2 + 2x + 15 \\ &= x^2 - x^2 - 2x + 2x - 8 + 15 \\ &= 7 \end{aligned}$$

$$\textcircled{6} \quad \frac{12}{\sqrt{3}} + (\sqrt{3} - 2)^2$$

$$\begin{aligned} &= \frac{12 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} + \{(\sqrt{3})^2 - 4\sqrt{3} + 2^2\} \\ &= \frac{12\sqrt{3}}{3} + \{3 - 4\sqrt{3} + 4\} \\ &= 4\sqrt{3} + 3 - 4\sqrt{3} + 4 = 7 \end{aligned}$$

$$\textcircled{7} \quad \frac{1}{3}(2x+1) - \frac{1}{4}(x-3)$$

$$\begin{aligned} &= \frac{4(2x+1) - 3(x-3)}{12} \\ &= \frac{8x+4 - 3x+9}{12} \\ &= \frac{5x+13}{12} \end{aligned}$$

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# 3年・平方根後 3

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①  $2 - 8$

$$= -6$$

②  $(-5) \times (-6)$

$$= 30$$

③  $(42x^2y - 21xy) \div 7xy$

$$\begin{aligned} &= \frac{42x^2y}{7xy} - \frac{21xy}{7xy} \\ &= 6x - 3 \end{aligned}$$

④  $36x^2y \div 9xy \times 7y$

$$\begin{aligned} &= \frac{36x^2y \times 7y}{9xy} \\ &= 28xy \end{aligned}$$

⑤  $(x-2)(x-4) - (x-3)^2$

$$\begin{aligned} &= x^2 - 6x + 8 - (x^2 - 6x + 9) \\ &= x^2 - 6x + 8 - x^2 + 6x - 9 \\ &= x^2 - x^2 - 6x + 6x + 8 - 9 \\ &= -1 \end{aligned}$$

⑥  $(\sqrt{3} + 1)(\sqrt{3} - 3) + \frac{\sqrt{60}}{\sqrt{5}}$

$$\begin{aligned} &= (\sqrt{3})^2 - 2\sqrt{3} - 3 + \sqrt{12} \\ &= 3 - 2\sqrt{3} - 3 + 2\sqrt{3} \\ &= 0 \end{aligned}$$

⑦  $\frac{1}{3}(5x+1) - \frac{1}{5}(2x-1)$

$$\begin{aligned} &= \frac{3(5x+1) - 5(2x-1)}{15} \\ &= \frac{15x+3 - 10x+5}{15} \\ &= \frac{5x+8}{15} \end{aligned}$$

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# 3年・平方根後 4

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①  $-4 + 11$

$$= 7$$

②  $42 \div (-7)$

$$= -6$$

③  $(28x^2y - 12xy) \div 4xy$

$$\begin{aligned} &= \frac{28x^2y}{4xy} - \frac{12xy}{4xy} \\ &= 7x - 3 \end{aligned}$$

④  $45x^2y \div 5xy \times 6y$

$$\begin{aligned} &= \frac{45x^2y \times 6y}{5xy} \\ &= 54xy \end{aligned}$$

⑤  $(x-4)(x+1) - (x-6)(x+3)$

$$\begin{aligned} &= x^2 - 3x - 4 - (x^2 - 3x - 18) \\ &= x^2 - 3x - 4 - x^2 + 3x + 18 \\ &= x^2 - x^2 - 3x + 3x - 4 + 18 \\ &= 16 \end{aligned}$$

⑥  $(\sqrt{5} + 1)^2 - \frac{15}{\sqrt{5}}$

$$\begin{aligned} &= (\sqrt{5})^2 + 2\sqrt{5} + 1^2 - \frac{15 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= 5 + 2\sqrt{5} + 1 - \frac{15\sqrt{5}}{5} \\ &= 5 + 2\sqrt{5} + 1 - 3\sqrt{5} = 6 - \sqrt{5} \end{aligned}$$

⑦  $\frac{1}{3}(2x+1) - \frac{1}{4}(3x-2)$

$$\begin{aligned} &= \frac{4(2x+1) - 3(3x-2)}{12} \\ &= \frac{8x+4 - 9x+6}{12} \\ &= \frac{-x+10}{12} \end{aligned}$$

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# 3年・平方根後 5

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①  $-2 - 5$

$$= -7$$

②  $-4 \times 8$

$$= -32$$

③  $(40x^2y - 25xy) \div 5xy$

$$\begin{aligned} &= \frac{40x^2y}{5xy} - \frac{25xy}{5xy} \\ &= 8x - 5 \end{aligned}$$

④  $56x^2y \div 8xy \times 4y$

$$\begin{aligned} &= \frac{56x^2y \times 4y}{8xy} \\ &= 28xy \end{aligned}$$

⑤  $(x+4)(x-1) - (x+2)(x-2)$

$$\begin{aligned} &= x^2 + 3x - 4 - (x^2 - 4) \\ &= x^2 + 3x - 4 - x^2 + 4 \\ &= x^2 - x^2 + 3x - 4 + 4 \\ &= 3x \end{aligned}$$

⑥  $(\sqrt{2} - 3)^2 + \frac{8}{\sqrt{2}}$

$$\begin{aligned} &= (\sqrt{2})^2 - 6\sqrt{2} + 3^2 - \frac{8 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} \\ &= 2 - 6\sqrt{2} + 9 - \frac{8\sqrt{2}}{2} \\ &= 2 - 6\sqrt{2} + 9 - 4\sqrt{2} = 11 - 10\sqrt{2} \end{aligned}$$

⑦  $\frac{1}{3}(2x+3) - \frac{1}{5}(3x-2)$

$$\begin{aligned} &= \frac{5(2x+3) - 3(3x-2)}{15} \\ &= \frac{10x+15 - 9x+6}{15} \\ &= \frac{x+21}{15} \end{aligned}$$

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# 3年・平方根後 6

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①  $3 - 8$

$$= -5$$

②  $(-48) \div (-8)$

$$= -6$$

③  $(48x^2y - 18xy) \div 6xy$

$$\begin{aligned} &= \frac{48x^2y}{6xy} - \frac{18xy}{6xy} \\ &= 8x - 3 \end{aligned}$$

④  $28x^2y \div 7xy \times 3y$

$$\begin{aligned} &= \frac{28x^2y \times 3y}{7xy} \\ &= 12xy \end{aligned}$$

⑤  $(x+5)(x-3) - (x+6)(x-4)$

$$\begin{aligned} &= x^2 + 2x - 15 - (x^2 + 2x - 24) \\ &= x^2 + 2x - 15 - x^2 - 2x + 24 \\ &= x^2 - x^2 + 2x - 2x - 15 + 24 \\ &= 9 \end{aligned}$$

⑥  $(\sqrt{3} + 1)^2 - \frac{9}{\sqrt{3}}$

$$\begin{aligned} &= (\sqrt{3})^2 + 2\sqrt{3} + 1^2 - \frac{9 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} \\ &= 3 + 2\sqrt{3} + 1 - \frac{9\sqrt{3}}{3} \\ &= 3 + 2\sqrt{3} + 1 - 3\sqrt{3} = 4 - \sqrt{3} \end{aligned}$$

⑦  $\frac{1}{3}(5x+2) - \frac{1}{4}(3x-1)$

$$\begin{aligned} &= \frac{4(5x+2) - 3(3x-1)}{12} \\ &= \frac{20x+8 - 9x+3}{12} \\ &= \frac{11x+11}{12} \end{aligned}$$

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# 3年・平方根後 7

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①  $-2 + 5$

$$= 3$$

②  $3 \times (-9)$

$$= 6$$

③  $(49x^2y - 28xy) \div 7xy$

$$\begin{aligned} &= \frac{49x^2y}{7xy} - \frac{28xy}{7xy} \\ &= 7x - 4 \end{aligned}$$

④  $32x^2y \div 8xy \times 6y$

$$\begin{aligned} &= \frac{32x^2y \times 6y}{8xy} \\ &= 24xy \end{aligned}$$

⑤  $(x+2)(x-3) - (x-2)^2$

$$\begin{aligned} &= x^2 - x - 6 - (x^2 - 4x + 4) \\ &= x^2 - x - 6 - x^2 + 4x - 4 \\ &= x^2 - x^2 - x + 4x - 6 - 4 \\ &= 3x - 10 \end{aligned}$$

⑥  $(\sqrt{5} - 2)^2 + \frac{15}{\sqrt{5}}$

$$\begin{aligned} &= (\sqrt{5})^2 - 4\sqrt{5} + 2^2 - \frac{15 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= 5 - 4\sqrt{5} + 4 - \frac{15\sqrt{5}}{5} \\ &= 5 - 4\sqrt{5} + 4 - 3\sqrt{5} = 9 - 7\sqrt{5} \end{aligned}$$

⑦  $\frac{1}{3}(2x+1) - \frac{1}{5}(x-2)$

$$\begin{aligned} &= \frac{5(2x+1) - 3(x-2)}{15} \\ &= \frac{10x+5 - 3x+6}{15} \\ &= \frac{7x+11}{15} \end{aligned}$$

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# 3年・平方根後 8

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①  $-7 - 5$

$$= -12$$

②  $54 \div (-6)$

$$= -9$$

③  $(42x^2y - 18xy) \div 6xy$

$$\begin{aligned} &= \frac{42x^2y}{6xy} - \frac{18xy}{6xy} \\ &= 7x - 3 \end{aligned}$$

④  $48x^2y \div 8xy \times 3y$

$$\begin{aligned} &= \frac{48x^2y \times 3y}{8xy} \\ &= 18xy \end{aligned}$$

⑤  $(x+4)(x-3) - (x+3)(x-3)$

$$\begin{aligned} &= x^2 + x - 12 - (x^2 - 9) \\ &= x^2 + x - 12 - x^2 + 9 \\ &= x^2 - x^2 + x - 12 + 9 \\ &= x - 3 \end{aligned}$$

⑥  $(\sqrt{5} - 1)^2 + \frac{10}{\sqrt{5}}$

$$\begin{aligned} &= (\sqrt{5})^2 - 2\sqrt{5} + 1^2 - \frac{10 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\ &= 5 - 2\sqrt{5} + 1 - \frac{10\sqrt{5}}{5} \\ &= 5 - 2\sqrt{5} + 1 - 2\sqrt{5} = 6 - 4\sqrt{5} \end{aligned}$$

⑦  $\frac{1}{3}(2x+1) - \frac{1}{5}(2x-3)$

$$\begin{aligned} &= \frac{5(2x+1) - 3(2x-3)}{15} \\ &= \frac{10x+5 - 6x+9}{15} \\ &= \frac{4x+14}{15} \end{aligned}$$

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