

第1章 3. 「分数式の計算」「平方根」 第3回

解答

1. (1)  $\frac{4r}{3st^3}$  (2)  $\frac{a(a^2+b^2)}{b(a+b)}$  (3)  $\frac{x+1}{x+4}$
2. (1)  $\frac{5x+2}{(x+2)(x-2)}$  (2)  $\frac{1}{xy}$  (3)  $\frac{x+2}{x(x+1)(x-2)}$
3. (1)  $\frac{2r^3s^2}{3t}$  (2)  $\frac{(a+3)(a-3)}{(a+1)(a+2)}$
4. (1)  $3\sqrt{5}$  (2)  $4-\sqrt{10}$  (3)  $59+24\sqrt{6}$
5. (1)  $\frac{2\sqrt{10}}{3}$  (2)  $\frac{\sqrt{5}-\sqrt{3}}{2}$  (3)  $\frac{1-\sqrt{5}}{4}$

解説

1. (1) 与式 =  $\frac{12r^7s^3t^5}{9r^6s^4t^8} = \frac{4r}{3st^3}$  (2) 与式 =  $\frac{ab(a^2+b^2)}{b^2(a+b)} = \frac{a(a^2+b^2)}{b(a+b)}$
- (3) 与式 =  $\frac{(x+1)^2}{(x+1)(x+4)} = \frac{x+1}{x+4}$
2. (1) 与式 =  $\frac{2(x-2)}{(x+2)(x-2)} + \frac{3(x+2)}{(x+2)(x-2)} = \frac{2x-4}{(x+2)(x-2)} + \frac{3x+6}{(x+2)(x-2)} = \frac{5x+2}{(x+2)(x-2)}$
- (2) 与式 =  $\frac{1}{y(x+2y)} + \frac{2}{x(x+2y)} = \frac{x}{xy(x+2y)} + \frac{2y}{xy(x+2y)} = \frac{x+2y}{xy(x+2y)} = \frac{1}{xy}$
- (3) 与式 =  $\frac{2}{x(x-2)} - \frac{1}{(x+1)(x-2)} = \frac{2(x+1)}{x(x+1)(x-2)} - \frac{x}{x(x+1)(x-2)}$   
 $= \frac{2x+2}{x(x+1)(x-2)} - \frac{x}{x(x+1)(x-2)} = \frac{x+2}{x(x+1)(x-2)}$
3. (1) 与式 =  $\frac{9s^4t^2}{4r^2} \times \frac{8r^5}{27s^2t^3} = \frac{s^2}{1} \times \frac{2r^3}{3t} = \frac{2r^3s^2}{3t}$
- (2) 与式 =  $\frac{(a+3)(a-1)}{(a-2)(a+1)} \times \frac{(a-2)(a-3)}{(a+2)(a-1)} = \frac{a+3}{a+1} \times \frac{a-3}{a+2} = \frac{(a+3)(a-3)}{(a+1)(a+2)}$
4. (1) 与式 =  $2\sqrt{5} - 3\sqrt{5} + 4\sqrt{5} = 3\sqrt{5}$
- (2) 与式 =  $2(\sqrt{5})^2 - 3\sqrt{10} + 2\sqrt{10} - 3(\sqrt{2})^2 = 2 \times 5 - \sqrt{10} - 3 \times 2 = 4 - \sqrt{10}$
- (3) 与式 =  $(4\sqrt{2})^2 + 2 \times 12\sqrt{6} + (3\sqrt{3})^2 = 16 \times 2 + 24\sqrt{6} + 9 \times 3 = 59 + 24\sqrt{6}$
5. (1) 与式 =  $\frac{4\sqrt{5}}{3\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{5}\sqrt{2}}{3(\sqrt{2})^2} = \frac{4\sqrt{10}}{3 \times 2} = \frac{2\sqrt{10}}{3}$
- (2) 与式 =  $\frac{\sqrt{5}-\sqrt{3}}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})} = \frac{\sqrt{5}-\sqrt{3}}{(\sqrt{5})^2 - (\sqrt{3})^2} = \frac{\sqrt{5}-\sqrt{3}}{5-3} = \frac{\sqrt{5}-\sqrt{3}}{2}$
- (3) 与式 =  $\frac{(2-\sqrt{5})(3+\sqrt{5})}{(3-\sqrt{5})(3+\sqrt{5})} = \frac{6+2\sqrt{5}-3\sqrt{5}-(\sqrt{5})^2}{3^2 - (\sqrt{5})^2} = \frac{6-\sqrt{5}-5}{9-5} = \frac{1-\sqrt{5}}{4}$