第1章 3.「分数式の計算」「平方根」 第2回

解答

1. (1) $\dfrac{9y}{2z^4}$ (2) $\dfrac{s}{t}$ (3) $\dfrac{x-3}{x+1}$

2. (1) $\dfrac{x+5}{(x-1)(x+2)}$ (2) $\dfrac{2}{(s-t)(s+t)}$ (3) $\dfrac{2x+3}{(x-1)(x+1)(x+2)}$

3. (1) $\dfrac{2x^4}{5y^2z}$ (2) $\dfrac{(t+3)(t+4)}{(t+1)(t-2)}$

4. (1) $\sqrt{3}$ (2) $-12+5\sqrt{15}$ (3) $38-12\sqrt{10}$

5. (1) $\dfrac{\sqrt{6}}{9}$ (2) $\dfrac{\sqrt{5}+\sqrt{2}}{3}$ (3) $3-\sqrt{5}$

解説

1. (1) 与式 $=\dfrac{36x^6y^4z^2}{8x^6y^3z^6}=\dfrac{9y}{2z^4}$ (2) 与式 $=\dfrac{s^2(s-t)}{st(s-t)}=\dfrac{s}{t}$

(3) 与式 $=\dfrac{(x-1)(x-3)}{(x-1)(x+1)}=\dfrac{x-3}{x+1}$

2. (1) 与式 $=\dfrac{2(x+2)}{(x-1)(x+2)}-\dfrac{x-1}{(x-1)(x+2)}=\dfrac{2x+4}{(x-1)(x+2)}-\dfrac{x-1}{(x-1)(x+2)}=\dfrac{x+5}{(x-1)(x+2)}$

(2) 与式 $=\dfrac{1}{s(s-t)}+\dfrac{1}{s(s+t)}=\dfrac{s+t}{s(s-t)(s+t)}+\dfrac{s-t}{s(s-t)(s+t)}=\dfrac{2s}{s(s-t)(s+t)}=\dfrac{2}{(s-t)(s+t)}$

(3) 与式 $=\dfrac{1}{(x-1)(x+1)}+\dfrac{1}{(x-1)(x+2)}=\dfrac{x+2}{(x-1)(x+1)(x+2)}+\dfrac{x+1}{(x-1)(x+1)(x+2)}$

$=\dfrac{2x+3}{(x-1)(x+1)(x+2)}$

3. (1) 与式 $=\dfrac{x^3}{y^2}\times\dfrac{2x}{5z}=\dfrac{2x^4}{5y^2z}$

(2) 与式 $=\dfrac{t^2+5t+6}{t^2+2t+1}\times\dfrac{t^2+5t+4}{t^2-4}=\dfrac{(t+2)(t+3)}{(t+1)^2}\times\dfrac{(t+1)(t+4)}{(t-2)(t+2)}=\dfrac{t+3}{t+1}\times\dfrac{t+4}{t-2}=\dfrac{(t+3)(t+4)}{(t+1)(t-2)}$

4. (1) 与式 $=2\sqrt{3}+4\sqrt{3}-5\sqrt{3}=\sqrt{3}$

(2) 与式 $=6\left(\sqrt{3}\right)^2+9\sqrt{15}-4\sqrt{15}-6\left(\sqrt{5}\right)^2=6\times3+5\sqrt{15}-6\times5=-12+5\sqrt{15}$

(3) 与式 $=\left(2\sqrt{5}\right)^2-2\times6\sqrt{10}+\left(3\sqrt{2}\right)^2=4\times5-12\sqrt{10}+9\times2=38-12\sqrt{10}$

5. (1) 与式 $=\dfrac{2}{3\sqrt{6}}\times\dfrac{\sqrt{6}}{\sqrt{6}}=\dfrac{2\sqrt{6}}{3\left(\sqrt{6}\right)^2}=\dfrac{2\sqrt{6}}{3\times6}=\dfrac{\sqrt{6}}{9}$

(2) 与式 $=\dfrac{\sqrt{5}+\sqrt{2}}{\left(\sqrt{5}-\sqrt{2}\right)\left(\sqrt{5}+\sqrt{2}\right)}=\dfrac{\sqrt{5}+\sqrt{2}}{\left(\sqrt{5}\right)^2-\left(\sqrt{2}\right)^2}=\dfrac{\sqrt{5}+\sqrt{2}}{5-2}=\dfrac{\sqrt{5}+\sqrt{2}}{3}$

(3) 与式 $=\dfrac{\left(\sqrt{5}+1\right)\left(\sqrt{5}-2\right)}{\left(\sqrt{5}+2\right)\left(\sqrt{5}-2\right)}=\dfrac{\left(\sqrt{5}\right)^2-2\sqrt{5}+\sqrt{5}-2}{\left(\sqrt{5}\right)^2-2^2}=\dfrac{5-\sqrt{5}-2}{5-4}=3-\sqrt{5}$