平方根の計算②　解答と解説

1 解答　(1)　$13\sqrt{3}$　(2)　$5\sqrt{5}$　(3)　$6\sqrt{7}$　(4)　$3\sqrt{2}$　(5)　$7\sqrt{6}$　(6)　$\frac{2\sqrt{2}}{3}$

(1)　$5\sqrt{3}+8\sqrt{3}=(5+8)\sqrt{3}=13\sqrt{3}$

(2)　$8\sqrt{5}-3\sqrt{5}=(8-3)\sqrt{5}=5\sqrt{5}$

(3)　$2\sqrt{7}+5\sqrt{7}-\sqrt{7}=(2+5-1)\sqrt{7}=6\sqrt{7}$

(4)　$8\sqrt{2}-10\sqrt{2}+5\sqrt{2}=(8-10+5)\sqrt{2}=3\sqrt{2}$

(5)　$-3\sqrt{6}+12\sqrt{6}-2\sqrt{6}=(-3+12-2)\sqrt{6}=7\sqrt{6}$

(6)　$\frac{\sqrt{2}}{3}+\frac{5\sqrt{2}}{6}-\frac{\sqrt{2}}{2}=\left(\frac{1}{3}+\frac{5}{6}-\frac{1}{2}\right)\sqrt{2}$

$=\frac{2+5-3}{6}\times\sqrt{2}$

$=\frac{2\sqrt{2}}{3}$

2 解答　(1)　$4\sqrt{2}+11\sqrt{3}$　(2)　$\sqrt{7}-4\sqrt{5}$　(3)　$4\sqrt{7}+2\sqrt{2}$

(4)　$-10-4\sqrt{2}-2\sqrt{5}$　(5)　$2\sqrt{5}+3\sqrt{6}$　(6)　$2+10\sqrt{3}$

(1)　$5\sqrt{2}+8\sqrt{3}-\sqrt{2}+3\sqrt{3}=(5-1)\sqrt{2}+(8+3)\sqrt{3}$

$=4\sqrt{2}+11\sqrt{3}$

(2)　$-2\sqrt{7}+8\sqrt{5}+3\sqrt{7}-12\sqrt{5}=(-2+3)\sqrt{7}+(8-12)\sqrt{5}$

$=\sqrt{7}-4\sqrt{5}$

(3)　$3\sqrt{7}-2\sqrt{2}-4\sqrt{7}+4\sqrt{2}+5\sqrt{7}=(3-4+5)\sqrt{7}+(-2+4)\sqrt{2}$

$=4\sqrt{7}+2\sqrt{2}$

(4)　$-9\sqrt{2}+1+5\sqrt{2}-7-2\sqrt{5}-4=(1-7-4)+(-9+5)\sqrt{2}-2\sqrt{5}$

$=-10-4\sqrt{2}-2\sqrt{5}$

(5)　$5\sqrt{5}-(-\sqrt{6})+(-2\sqrt{5})-\sqrt{5}+2\sqrt{6}=5\sqrt{5}+\sqrt{6}-2\sqrt{5}-\sqrt{5}+2\sqrt{6}$

$=(5-2-1)\sqrt{5}+(1+2)\sqrt{6}$

$=2\sqrt{5}+3\sqrt{6}$

(6)　$8\sqrt{3}-4+(-2\sqrt{3})-(-6)-(-4\sqrt{3})=8\sqrt{3}-4-2\sqrt{3}+6+4\sqrt{3}$

$=(-4+6)+(8-2+4)\sqrt{3}$

$=2+10\sqrt{3}$

3 解答　(1)　$8\sqrt{2}$　(2)　$3\sqrt{3}$　(3)　$-2\sqrt{5}$　(4)　$\sqrt{5}$　(5)　$\sqrt{2}$

(6)　$-\sqrt{6}$　(7)　0　(8)　$3\sqrt{7}$

(1)　$\sqrt{8}+\sqrt{72}=2\sqrt{2}+6\sqrt{2}=8\sqrt{2}$

(2)　$\sqrt{75}-\sqrt{12}=5\sqrt{3}-2\sqrt{3}=3\sqrt{3}$

(3)　$\sqrt{20}-\sqrt{80}=2\sqrt{5}-4\sqrt{5}=-2\sqrt{5}$

(4)　$\sqrt{80}-\sqrt{180}+\sqrt{45}=4\sqrt{5}-6\sqrt{5}+3\sqrt{5}=\sqrt{5}$

(5)　$\sqrt{50}-\sqrt{98}+\sqrt{18}=5\sqrt{2}-7\sqrt{2}+3\sqrt{2}=\sqrt{2}$

(6)　$\sqrt{54}+\sqrt{24}-\sqrt{216}=3\sqrt{6}+2\sqrt{6}-6\sqrt{6}=-\sqrt{6}$

(7)　$-\sqrt{48}-(-\sqrt{108})-\sqrt{12}=-\sqrt{48}+\sqrt{108}-\sqrt{12}$

$=-4\sqrt{3}+6\sqrt{3}-2\sqrt{3}$

$=0$

(8)　$\sqrt{28}-\sqrt{7}-(-\sqrt{175})+(-\sqrt{63})=\sqrt{28}-\sqrt{7}+\sqrt{175}-\sqrt{63}$

$=2\sqrt{7}-\sqrt{7}+5\sqrt{7}-3\sqrt{7}$

$=3\sqrt{7}$