平方根の加減（有理化してから計算）

例題　次の計算をせよ。(有理化して計算)

(1) $\frac{2}{\sqrt{3}}-\frac{\sqrt{3}}{3}$

答

(2) $\sqrt{96}-\sqrt{\frac{2}{3}}$

答

(3) $\frac{\sqrt{5}}{\sqrt{3}}-\frac{\sqrt{3}}{\sqrt{5}}$

答

練習　次の計算をせよ。

(1) $\frac{1}{\sqrt{2}}-\frac{3\sqrt{2}}{2}$

答

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

答

(3) $\sqrt{18}-\frac{1}{\sqrt{2}}$

答

(4) $\sqrt{\frac{3}{5}}+\frac{2\sqrt{5}}{\sqrt{3}}$

答

平方根の加減（有理化してから計算）

例題　次の計算をせよ。(有理化して計算)

(1) $\frac{2}{\sqrt{3}}-\frac{\sqrt{3}}{3}$

★

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

答　$\frac{\sqrt{3}}{3}$

(2) $\sqrt{96}-\sqrt{\frac{2}{3}}$

★

$$\sqrt{96}-\sqrt{\frac{2}{3}}=4\sqrt{6}-\frac{\sqrt{2}}{\sqrt{3}}$$
$$=4\sqrt{6}-\frac{\sqrt{2}\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}$$
$$=4\sqrt{6}-\frac{\sqrt{6}}{3}$$
$$=\frac{12\sqrt{6}}{3}-\frac{\sqrt{6}}{3}$$
$$=\frac{11\sqrt{6}}{3}$$

答　$\frac{11\sqrt{6}}{3}$

(3) $\frac{\sqrt{5}}{\sqrt{3}}-\frac{\sqrt{3}}{\sqrt{5}}$

★

$$\frac{\sqrt{5}}{\sqrt{3}}-\frac{\sqrt{3}}{\sqrt{5}}=\frac{\sqrt{5}\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}-\frac{\sqrt{3}\times\sqrt{5}}{\sqrt{5}\times\sqrt{5}}$$
$$=\frac{\sqrt{15}}{3}-\frac{\sqrt{15}}{5}$$
$$=\frac{5\sqrt{15}}{15}-\frac{3\sqrt{15}}{15}$$
$$=\frac{2\sqrt{15}}{15}$$

答　$\frac{2\sqrt{15}}{15}$

練習　次の計算をせよ。

(1) $\frac{1}{\sqrt{2}}-\frac{3\sqrt{2}}{2}$

★

$$\frac{1}{\sqrt{2}}-\frac{3\sqrt{2}}{2}=\frac{1\times\sqrt{2}}{\sqrt{2}\times\sqrt{2}}-\frac{3\sqrt{2}}{2}$$
$$=\frac{\sqrt{2}}{2}-\frac{3\sqrt{2}}{2}$$
$$=-\frac{{}^{1}\cancel{2}\sqrt{2}}{\cancel{2}_{1}}$$
$$=-\sqrt{2}$$

答　$-\sqrt{2}$

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

★

$$\frac{2}{\sqrt{2}}-\frac{6}{\sqrt{3}}=\frac{2\times\sqrt{2}}{\sqrt{2}\times\sqrt{2}}-\frac{6\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}$$
$$=\frac{{}^{1}\cancel{2}\times\sqrt{2}}{\cancel{2}_{1}}-\frac{{}^{2}\cancel{6}\times\sqrt{3}}{\cancel{3}_{1}}$$
$$=\sqrt{2}-2\sqrt{3}$$

答　$\sqrt{2}-2\sqrt{3}$

(3) $\sqrt{18}-\frac{1}{\sqrt{2}}$

★

$$\sqrt{18}-\frac{1}{\sqrt{2}}=3\sqrt{2}-\frac{1\times\sqrt{2}}{\sqrt{2}\times\sqrt{2}}$$
$$=3\sqrt{2}-\frac{\sqrt{2}}{2}$$
$$=\frac{6\sqrt{2}}{2}-\frac{\sqrt{2}}{2}$$
$$=\frac{5\sqrt{2}}{2}$$

答　$\frac{5\sqrt{2}}{2}$

(4) $\sqrt{\frac{3}{5}}+\frac{2\sqrt{5}}{\sqrt{3}}$

★

$$\sqrt{\frac{3}{5}}+\frac{2\sqrt{5}}{\sqrt{3}}=\frac{\sqrt{3}}{\sqrt{5}}+\frac{2\sqrt{5}}{\sqrt{3}}$$
$$=\frac{\sqrt{3}\times\sqrt{5}}{\sqrt{5}\times\sqrt{5}}+\frac{2\sqrt{5}\times\sqrt{3}}{\sqrt{3}\times\sqrt{3}}$$
$$=\frac{\sqrt{15}}{5}+\frac{2\sqrt{15}}{3}$$
$$=\frac{3\sqrt{15}}{15}+\frac{10\sqrt{15}}{15}$$
$$=\frac{13\sqrt{15}}{15}$$

答　$\frac{13\sqrt{15}}{15}$