

6 平方根 ③ ～根号をふくむ式の計算～

学年		組		氏名	
----	--	---	--	----	--

1 次の計算をなさい。

$$\begin{aligned}
 (1) \quad & \sqrt{5}(\sqrt{15} + 2) + 2\sqrt{3} \\
 &= \sqrt{75} + 2\sqrt{5} + 2\sqrt{3} \\
 &= 5\sqrt{3} + 2\sqrt{5} + 2\sqrt{3} \\
 &= (5+2)\sqrt{3} + 2\sqrt{5} \\
 &= 7\sqrt{3} + 2\sqrt{5}
 \end{aligned}$$

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

$$\begin{aligned}
 (2) \quad & \frac{9}{\sqrt{6}} + \frac{\sqrt{6}}{2} \\
 &= \frac{9 \times \sqrt{6}}{\sqrt{6} \times \sqrt{6}} + \frac{\sqrt{6}}{2} \\
 &= \frac{9\sqrt{6}}{6} + \frac{3\sqrt{6}}{6} \\
 &= \frac{12\sqrt{6}}{6} \\
 &= 2\sqrt{6}
 \end{aligned}$$

(H24宮城県入試問題)

$$2\sqrt{6}$$

$$\begin{aligned}
 (3) \quad & (\sqrt{3} + 2)(\sqrt{3} + 4) \\
 &= (\sqrt{3})^2 + (2+4)\sqrt{3} + 8 \\
 &= 3 + 6\sqrt{3} + 8 \\
 &= 11 + 6\sqrt{3}
 \end{aligned}$$

$$11 + 6\sqrt{3}$$

$$\begin{aligned}
 (4) \quad & (\sqrt{6} + \sqrt{3})^2 \\
 &= (\sqrt{6})^2 + 2 \times \sqrt{3} \times \sqrt{6} + (\sqrt{3})^2 \\
 &= 6 + 6\sqrt{2} + 3 \\
 &= 9 + 6\sqrt{2}
 \end{aligned}$$

$$9 + 6\sqrt{2}$$

$$\begin{aligned}
 (5) \quad & (\sqrt{7} - \sqrt{3})(\sqrt{7} + \sqrt{3}) - (\sqrt{5} - \sqrt{2})^2 \\
 &= (\sqrt{7})^2 - (\sqrt{3})^2 - \{(\sqrt{5})^2 - 2 \times \sqrt{2} \times \sqrt{5} + (\sqrt{2})^2\} \\
 &= 7 - 3 - (5 - 2\sqrt{10} + 2) \\
 &= 4 - 5 + 2\sqrt{10} - 2 \\
 &= -3 + 2\sqrt{10}
 \end{aligned}$$

$$-3 + 2\sqrt{10}$$

2 次の数の分母を有理化しなさい。

$$\begin{aligned}
 (1) \quad & \frac{\sqrt{18}}{\sqrt{3}\sqrt{5}} = \frac{\sqrt{6}}{\sqrt{5}} \\
 &= \frac{\sqrt{6} \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} \\
 &= \frac{\sqrt{30}}{5}
 \end{aligned}$$

$$\frac{\sqrt{30}}{5}$$

$$\begin{aligned}
 (2) \quad & \frac{\sqrt{2} - 2}{\sqrt{5}} = \frac{\sqrt{5}(\sqrt{2} - 2)}{\sqrt{5} \times \sqrt{5}} \\
 &= \frac{\sqrt{10} - 2\sqrt{5}}{5}
 \end{aligned}$$

$$\frac{\sqrt{10} - 2\sqrt{5}}{5}$$

3 $\sqrt{45} = 6.71$ として、 $\sqrt{180}$ の値を求めなさい。

$$\sqrt{180} = \sqrt{45} \times \sqrt{4} \text{ より}$$

$$\sqrt{45} = 6.71 \text{ を代入すると,}$$

$$\sqrt{180} = 6.71 \times 2$$

$$= 13.42$$

$$13.42$$