

1. $\sqrt{3}\left(\frac{2}{\sqrt{6}} - \frac{10}{\sqrt{12}}\right) + \frac{6-2\sqrt{8}}{\sqrt{2}} = a + b\sqrt{2}$ 일 때, $a \times b$ 의 값은? (단, a, b 는 유리수)

① -48 ② -36 ③ -24 ④ -18 ⑤ -12

해설

$$\begin{aligned} & \sqrt{3}\left(\frac{2}{\sqrt{6}} - \frac{10}{\sqrt{12}}\right) + \frac{6-2\sqrt{8}}{\sqrt{2}} \\ &= \frac{2\sqrt{3}}{\sqrt{6}} - \frac{10\sqrt{3}}{\sqrt{12}} + \frac{6\sqrt{2}-2\sqrt{16}}{2} \\ &= \sqrt{2}-5+3\sqrt{2}-4 \\ &= -9+4\sqrt{2} \\ &a = -9, b = 4 \\ &\therefore ab = -36 \end{aligned}$$

2. $x = \frac{\sqrt{3} + \sqrt{2}}{2}$, $y = \frac{\sqrt{3} - \sqrt{2}}{2}$ 일 때, $(x+y)(x-y)$ 의 값은?

① $\sqrt{2}$

② $\sqrt{3}$

③ $\sqrt{6}$

④ $2\sqrt{3}$

⑤ $3\sqrt{6}$

해설

$$x+y = \frac{\sqrt{3} + \sqrt{2} + \sqrt{3} - \sqrt{2}}{2} = \frac{2\sqrt{3}}{2} = \sqrt{3}$$

$$x-y = \frac{\sqrt{3} + \sqrt{2} - (\sqrt{3} - \sqrt{2})}{2} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$\therefore (x+y)(x-y) = \sqrt{3} \times \sqrt{2} = \sqrt{6}$$

3. $\frac{4}{\sqrt{10}} \times \sqrt{30} \div \frac{\sqrt{12}}{\sqrt{5}}$ 를 간단히 한 것은?

- ① 2 ② $2\sqrt{5}$ ③ $3\sqrt{2}$ ④ $3\sqrt{5}$ ⑤ $4\sqrt{2}$

해설

$$\begin{aligned}\frac{4}{\sqrt{10}} \times \sqrt{30} \div \frac{\sqrt{12}}{\sqrt{5}} &= \frac{4}{\sqrt{10}} \times \sqrt{30} \times \frac{\sqrt{5}}{2\sqrt{3}} \\ &= 2\sqrt{\frac{30 \times 5}{10 \times 3}} = 2\sqrt{5}\end{aligned}$$

4. $6\sqrt{6} \div 3\sqrt{2} \times 5\sqrt{6} = a\sqrt{2}$ 을 만족하는 유리수 a 의 값은?

① 10

② 15

③ 20

④ 25

⑤ 30

해설

$$\begin{aligned} 6\sqrt{6} \div 3\sqrt{2} \times 5\sqrt{6} &= \frac{6\sqrt{6}}{3\sqrt{2}} \times 5\sqrt{6} \\ &= 2\sqrt{3} \times 5\sqrt{6} = 10\sqrt{3^2 \times 2} \\ &= 30\sqrt{2} \end{aligned}$$

$$30\sqrt{2} = a\sqrt{2}$$

$$\therefore a = 30$$