1. $3^3 \div 3^a = 27,\ 4^b + 4^b + 4^b + 4^b = 4^3$ 일 때, $a - b$ 의 값은?

① -1 ② -2 ③ -3 ④ -4 ⑤ -5

해설

$3^3 \div 3^a = 3^{3-a} = 27 = 3^3$

$3 - a = 3$

$\therefore\ a = 0$

$4^b + 4^b + 4^b + 4^b = 4 \cdot 4^b = 4^{b+1} = 4^3$

$b + 1 = 3$

$\therefore\ b = 2$

$\therefore\ a - b = -2$

2. $9^{n-1}\left(2\cdot 5^{n+1}-5^{n}\right)$ 을 간단히 한 것은?

① 9^{n+2} ② 25^{n} ③ 25^{2n-1}

④ 45^{n} ⑤ 45^{n+2}

해설

$$\begin{aligned} 9^{n-1}\left(2\cdot 5^{n+1}-5^{n}\right) &= 9^{n-1}\left(10\times 5^{n}-5^{n}\right) \\ &= 9^{n-1}\left(9\times 5^{n}\right) \\ &= 9^{n}\times 5^{n} \\ &= 45^{n} \end{aligned}$$

3. $(2x^2y)^3 \times (-x^2y^3) \div \{(-x)^3y\}^2$ 을 간단히 하면?

① $-8x^2y^4$ ② $2x^2y^3$ ③ $8x^2y^4$

④ $-2x^2y^3$ ⑤ $4x^4y^2$

해설

$2^3x^6y^3 \times (-x^2y^3) \div x^6y^2$

$= -8x^8y^6 \div x^6y^2 = -8x^2y^4$