1. $20x^2 - ax - 9 = (4x - 3)(5x - b)$ 일 때, $a + b$ 의 값을 구하면?

① -3 ② 3 ③ -1 ④ 0 ⑤ 1

해설

$$(4x - 3)(5x - b) = 20x^2 - (4b + 15)x + 3b$$
$$= 20x^2 - ax - 9$$

$3b = -9,\ b = -3$

$-(4b + 15) = -3 = -a$

$a = 3$

$\therefore\ a + b = 3 - 3 = 0$

2. 다음 중 인수분해가 바르게 된 것은?

① $4a^2 - 2ab = 2a(a - b)$

② $x^2 + 20x - 100 = (x + 10)^2$

③ $-x^2 + 1 = (x + 1)(-x - 1)$

④ $x^2 - 7x + 12 = (x - 2)(x - 6)$

⑤ $10x^2 + 23x - 21 = (x + 3)(10x - 7)$

해설

① $4a^2 - 2ab = 2a(2a - b)$

③ $-x^2 + 1 = -(x + 1)(x - 1)$

④ $x^2 - 7x + 12 = (x - 3)(x - 4)$

3. $(-3x+4y)(3x+4y)-\left(\frac{1}{4}x+5y\right)\left(\frac{1}{4}x-5y\right)$ 를 간단히 하면?

① $-\frac{111}{16}x^2+25y^2$

② $-\frac{111}{16}x^2+16y^2$

③ $-\frac{145}{16}x^2+41y^2$

④ $-\frac{137}{4}x^2+41y^2$

⑤ $-\frac{137}{8}x^2+31y^2$

해설

$$-(3x)^2+(4y)^2-\left\{\left(\frac{1}{4}x\right)^2-(5y)^2\right\}$$
$$=-9x^2+16y^2-\frac{1}{16}x^2+25y^2$$
$$=-\frac{145}{16}x^2+41y^2$$

4. $(a-b-2c)(a-b+5c)-30c^2$ 을 인수분해하면?

① $(a-b+3c)(a-b-7c)$ ② $(a-b+4c)(a-b+5c)$

③ $(a-b-5c)(a-b+8c)$ ④ $(a-b+5c)(a-b-8c)$

⑤ $(a-b-2c)(a-b+4c)$

해설

$a-b=t$로 놓으면,

$(a-b-2c)(a-b+5c)-30c^2$

$=(t-2c)(t+5c)-30c^2$

$=t^2+3ct-40c^2$

$=(t-5c)(t+8c)$

$=(a-b-5c)(a-b+8c)$

5. $b-a=\sqrt{3}$, $ab=1$ 이고, $(b+a)b^2-(a+b)a^2=m\sqrt{3}$ 이라 할 때, m 의 값을 구하여라.

▶ 답 :

▷ 정답 : $m=7$

해설

$$\begin{aligned}(b+a)^2 &= (b-a)^2+4ab \\ &= (\sqrt{3})^2+4=7\end{aligned}$$

$$\begin{aligned}(b+a)b^2-(a+b)a^2 &= (b+a)(b^2-a^2) \\ &= (b+a)^2(b-a) \\ &= 7\sqrt{3}=m\sqrt{3}\end{aligned}$$

따라서 $m=7$ 이다.