

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

$$\begin{aligned}(4x - 3)(5x - b) &= 20x^2 - (4b + 15)x + 3b \\ &= 20x^2 - ax - 9\end{aligned}$$

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

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

$$a = 3$$

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

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

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

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

$$\begin{aligned} a-b &= t \text{로 놓으면,} \\ (a-b-2c)(a-b+5c)-30c^2 \\ &= (t-2c)(t+5c)-30c^2 \\ &= t^2+3ct-40c^2 \\ &= (t-5c)(t+8c) \\ &= (a-b-5c)(a-b+8c) \end{aligned}$$

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.