

Simplify: Answer can be given directly ↓

(1) $(3ab + 1)(3ab - 2)$

$$= 9a^2b^2 - 6ab + 3ab - 2$$

$$= 9a^2b^2 - 3ab - 2$$

(2) $(q - 4p)(q + 4p)$

$$= \cancel{q^2} + \cancel{4pq} - \cancel{4pq} - 16p^2$$

$$= q^2 - 16p^2$$

(3) $(-3 + 5k)^2$

$$= (-3 + 5k)(-3 + 5k)$$

$$= 9 - 15k - 15k + 25k^2$$

$$= 9 - 30k + 25k^2$$

(4) $2(a^2 - 1) + 3(3 + a)^2$

$$= 2a^2 - 2 + 3(3 + a)(3 + a)$$

$$= 2a^2 - 2 + 3(9 + 3a + 3a + a^2)$$

$$= 2a^2 - 2 + 27 + 9a + 9a + 3a^2$$

$$= 5a^2 + 25 + 18a$$

$$= 5a^2 + 18a + 25$$

(5) $(m - 3)(m^2 - 3m + 9)$

$$= m^3 - 3m^2 + 9m - 3m^2 + 9m - 27$$

$$= m^3 - 6m^2 + 18m - 27$$

$$\begin{aligned}
 (6) \quad & \left(\frac{m^2n}{2} - \frac{3}{mn} \right) \left(\frac{mn}{3} - \frac{4}{mn^2} \right) \\
 &= \frac{m^3n^2}{6} - \frac{4m^2n}{2mn^2} - \frac{3mn}{3mn} + \frac{12}{m^2n^3} \\
 &= \frac{m^3n^2}{6} - \frac{2m}{n} - 1 + \frac{12}{m^2n^3}
 \end{aligned}$$

$$\begin{aligned}
 (7) \quad & \frac{1}{2}(4p - 12) - (p + 1)(p - 1) \\
 &= 2p - 6 - (p^2 - 1) \\
 &= 2p - 6 - p^2 + 1 \\
 &= 2p - 5 - p^2 \\
 &= -p^2 + 2p - 5
 \end{aligned}$$

$$\begin{aligned}
 & (p+1)(p-1) \\
 &= p^2 - p + p - 1 \\
 &= p^2 - 1
 \end{aligned}$$

$$\begin{aligned}
 (8) \quad & -2(x - 3y)^2 \\
 &= -2(x - 3y)(x - 3y) \\
 &= -2(x^2 - 3xy - 3xy + 9y^2) \\
 &= -2(x^2 - 6xy + 9y^2) \\
 &= -2x^2 + 12xy - 18y^2
 \end{aligned}$$

$$\begin{aligned}
 (9) \quad & (y - 2)(y^2 + 4)(y + 2) \\
 &= (y - 2)(y + 2)(y^2 + 4) \\
 &= (y^2 - 4)(y^2 + 4) \\
 &= y^4 - 16
 \end{aligned}$$

$$\begin{aligned}
 (10) \quad & (2 + k)(4 - 2k + k^2) \\
 &= 8 - 4k + 2k^2 + 4k - 2k^2 + k^3 \\
 &= 8 + k^3
 \end{aligned}$$

Directly $\rightarrow$ sum of two cubes!