

$$\textcircled{1} \quad (a) \quad (3x)^3 - (2y)^3 \\ = (3x - 2y)(9x^2 + 6xy + 4y^2)$$

$$(b) \quad (3x - 1)(x + 4)$$

$$(c) \quad 9ab(6a + b)$$

$$\textcircled{2} \quad (a) \quad \frac{1}{x+2} - \frac{3}{x-1}$$

$$= \frac{1(x-1) - 3(x+2)}{(x+2)(x-1)}$$

$$= \frac{x-1-3x-6}{(x+2)(x-1)}$$

$$= \boxed{\frac{-2x-7}{(x+2)(x-1)}}$$

$$(b) \quad \frac{x}{3x+1} + \frac{2}{(3x+1)(x+4)}$$

$$= \frac{x(x+4) + 2}{(3x+1)(x+4)}$$

$$= \boxed{\frac{x^2 + 4x + 2}{(3x+1)(x+4)}}$$

$$\textcircled{3} \quad x^3 + 2bx^2 + kx + 2 = x^3 + ax^2 - bx^2 - 2bx - ax + 2$$

$$2 = a - 1$$

$$\boxed{3 = a}$$

$$k = -2 - a$$

$$k = -2 - 3$$

$$\boxed{k = -5}$$