

自宅学習課題 数学 II 解答

- 問 1 (1) $(x+3)(x-3) = x^2 - 9$
(2) $(2x+1)(2x-1) = 4x^2 - 1$
(3) $(x+5)^2 = x^2 + 10x + 25$
(4) $(3x+2)^2 = 9x^2 + 12x + 4$
(5) $(x-1)^2 = x^2 - 2x + 1$
(6) $(2x-3)^2 = 4x^2 - 12x + 9$
(7) $(x+3)(x+5) = x^2 + 8x + 15$
(8) $(x-7)(x+4) = x^2 - 3x - 28$
(9) $(2x+3)(3x+1) = 6x^2 + 11x + 3$
(10) $(3x-2)(4x+3) = 12x^2 + x - 6$

- 問 2 (1) $(x+1)^3 = x^3 + 3x^2 + 3x + 1$
(2) $(x-2)^3 = x^3 - 6x^2 + 12x - 8$
(3) $(x+3)^3 = x^3 + 9x^2 + 27x + 27$
(4) $(2x-1)^3 = 8x^3 - 12x^2 + 6x - 1$
(5) $(3x+1)^3 = 27x^3 + 27x^2 + 9x + 1$
(6) $(3x-2)^3 = 27x^3 - 54x^2 + 36x - 8$

- 問 3 (1) $6x^2 + 4x = 2x(3x+2)$
(2) $3a^2b - 9ab^2 = 3ab(a-3b)$
(3) $x^2 - 16 = (x+4)(x-4)$
(4) $25x^2 - 4 = (5x+2)(5x-2)$
(5) $x^2 + 4x + 4 = (x+2)^2$
(6) $16x^2 - 8x + 1 = (4x-1)^2$
(7) $x^2 - 4x + 3 = (x-1)(x-3)$
(8) $x^2 + x - 12 = (x+4)(x-3)$

$$(9) \quad 2x^2 + 7x + 3 = (2x + 1)(x + 3)$$

$$(10) \quad 5x^2 - 3x - 2 = (5x + 2)(x - 1)$$

問 4 (1) $x^3 + 1 = (x + 1)(x^2 - x + 1)$

$$(2) \quad x^3 - 8 = (x - 2)(x^2 + 2x + 4)$$

$$(3) \quad 8x^3 + 27 = (2x + 3)(4x^2 - 6x + 9)$$

$$(4) \quad 27x^3 - 64 = (3x - 4)(9x^2 + 12x + 16)$$

問 5 (1) $(a + b)^6 = a^6 + 6a^5b + 15a^4b^2 + 20a^3b^3 + 15a^2b^4 + 6ab^5 + b^6$

$$(2) \quad (a + b)^7 = a^7 + 7a^6b + 21a^5b^2 + 35a^4b^3 + 35a^3b^4 + 21a^2b^5 + 7ab^6 + b^7$$

問 6 (1) $(a + b)^5 = a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$

$$(2) \quad (a + b)^6 = a^6 + 6a^5b + 15a^4b^2 + 20a^3b^3 + 15a^2b^4 + 6ab^5 + b^6$$

問 7 (1) $\frac{2ab^3}{4a^2b} = \frac{b^2}{2a}$

$$(2) \quad \frac{9a^4bc^3}{6a^2b^3c} = \frac{3a^2c^2}{2b^2}$$

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

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

$$(5) \quad \frac{x^2+3x+2}{2(x+2)} = \frac{(x+1)(x+2)}{2(x+2)} = \frac{x+1}{2}$$

$$(6) \quad \frac{x^2-6x+9}{x^2-2x-3} = \frac{(x-3)^2}{(x-3)(x+1)} = \frac{x-3}{x+1}$$

問 8 (1) $\frac{c}{3ab} \times \frac{6ab^2}{c^2} = \frac{2b}{c}$

$$(2) \quad \frac{2c^3}{a^4b} \div \frac{8c}{a^2b} = \frac{c^2}{4a^2}$$

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

$$(4) \quad \frac{x+1}{3x} \div \frac{2(x+1)}{x(3x-1)} = \frac{3x-1}{6}$$

$$(5) \quad \frac{x^2-2x-3}{x^2-4} \times \frac{x+2}{x-3} = \frac{(x-3)(x+1)}{(x+2)(x-2)} \times \frac{x+2}{x-3} = \frac{x+1}{x-2}$$

$$(6) \quad \frac{x+2}{x} \div \frac{x^2+5x+6}{x^2+3x} = \frac{x+2}{x} \times \frac{x(x+3)}{(x+2)(x+3)} = 1$$

問 9 (1) $\frac{2a-b}{a+b} + \frac{a+3b}{a+b} = \frac{3a+2b}{a+b}$

$$(2) \quad \frac{x}{x^2-4} - \frac{2}{x^2-4} = \frac{x-2}{x^2-4} = \frac{x-2}{(x+2)(x-2)} = \frac{1}{x+2}$$

問 10 (1) $\frac{5}{x} + \frac{7}{y} = \frac{5y}{xy} + \frac{7x}{xy} = \frac{5y+7x}{xy}$

$$(2) \quad \frac{1}{2x} - \frac{4}{3y} = \frac{3y}{6xy} - \frac{8x}{6xy} = \frac{3y-8x}{6xy}$$

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

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

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

$$= \frac{5}{(x-3)(x+2)}$$