

# ML Algebra

①

$$a) 10^{-1} = \frac{1}{10} \quad b) 5^{-2} = \frac{1}{25} \quad c) x^{-3} = \frac{1}{x^3} \quad d) x^{-y} = \frac{1}{x^y}$$

$$\textcircled{2} \quad (x^3 + 5x^2 + 9x + 6) : (x+2) = \underline{\underline{x^2 + 3x + 3}}$$

$$\begin{array}{r} x^3 + 2x^2 \\ \hline 3x^2 + 9x + 6 \\ 3x^2 + 6x \\ \hline 3x + 6 \\ 3x + 6 \\ \hline 0 \end{array}$$

$$(x^3 - 1) : (x - 1) = \underline{\underline{x^2 + x + 1}}$$

$$\begin{array}{r} x^3 - x^2 \\ \hline x^2 - 1 \\ x^2 - x \\ \hline x - 1 \\ x - 1 \\ \hline 0 \end{array}$$

$$\begin{aligned} \textcircled{3} \quad \frac{b-a}{a-b} - \frac{x-2y^2}{2y^2-x} &= \frac{(-1)(a-b)}{(a-b)} - \frac{(-1)(2y^2-x)}{(2y^2-x)} \\ &= \underbrace{-1} - \underbrace{(-1)} \\ &= -1 + 1 = \underline{\underline{0}} \end{aligned}$$

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

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

$$5) a) \frac{\frac{4ab}{c}}{2ab} = \frac{4ab}{c} : \frac{2ab}{c} = \frac{4ab}{c} \cdot \frac{c}{2ab} = \underline{\underline{2}}$$

$$b) \frac{x+2}{12} : \frac{x^2+4x+4}{3} = \frac{x+2}{12} \cdot \frac{3}{(x+2)^2} = \frac{1}{4(x+2)}$$

$$6) \frac{a+2b}{a^2+ab} + \frac{1}{a+b} - \frac{1}{a}$$

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

$$= \frac{a+2b}{a(a+b)} + \frac{a}{a(a+b)} - \frac{a+b}{a(a+b)}$$

$$= \frac{a+2b+a-(a+b)}{a(a+b)} = \frac{2a+2b-a-b}{a(a+b)} = \frac{a+b}{a(a+b)} = \underline{\underline{\frac{1}{a}}}$$

$$7) \frac{1}{x+1} - \frac{4}{x^2+2x+1} = 0$$

$$\frac{1}{x+1} - \frac{4}{(x+1)^2} = 0 \quad | \cdot (x+1)^2$$

$$(x+1) - 4 = 0$$

$$\underline{\underline{x = 3}}$$

$$D = \mathbb{R} \setminus \{-1\}$$

$$L = \{3\}$$