

$1 \wedge 1 \vee \omega$

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

$f(x) = \begin{cases} ax+bx & ; \text{ } \end{cases}$
 $ax-\epsilon; a \leq a$

$ax-\epsilon = a-\epsilon \Rightarrow ax-\epsilon$
 $a-\epsilon$

①

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

$g(x) = x+a$
 $g(x) = x^2 \Rightarrow x+a = x^2 \Rightarrow b = -1$

$f(x) = x^2 \Rightarrow \frac{x^2+a}{x-a-b} \Rightarrow \frac{x+a}{x+1} = \frac{x+a}{\delta} = x$

$f(1) = \frac{1+1}{1+1} = \frac{1}{1} = 1$

②

$f(x) = \frac{x^2+a}{x^2+ax+b}$

$R_f: \mathbb{R} - \{-1\}$

$\frac{x^2}{x^2} = 1 \Rightarrow (a-4) \frac{x^2}{x^2} = -\epsilon \Rightarrow b = -1$

$f(1) = \frac{1+1}{1-4-1} = \frac{2}{-4}$

③

$f(x) = \frac{x^2 - \sqrt{x}}{-x^2+ax+b}$

$R_f: \mathbb{R} - \{1\}$

$\frac{-a}{-1} = 1 \Rightarrow a = -1$
 $\frac{b}{-1} = 1 \Rightarrow b = -1$

④

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

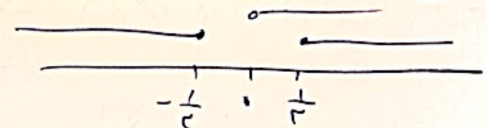
$R_f: \mathbb{R} - \{1\}$

$z = 1 \Rightarrow x = \epsilon \Rightarrow (m+1)x^2$
 $m = (-1, 1)$
 $m = 1$
 $\textcircled{1} \cap \textcircled{2} = [-1, 1]$

⑤

$$f(x) = \sqrt{\epsilon - \frac{1}{ax}} \Leftrightarrow \sqrt{\frac{\epsilon ax - 1}{ax}} \Leftrightarrow \epsilon ax - 1 \geq 0 \quad \epsilon ax \geq 1 \quad ax \geq \frac{1}{\epsilon}$$

mit $ax < -\frac{1}{\epsilon}$ ~~$ax > 0 \Rightarrow a > 0$~~



$$\Rightarrow \sqrt{\epsilon} \in \left[\frac{1}{\epsilon}, +\infty \right)$$

$$\circ \cup \infty$$

$$\epsilon ax - 1 \geq 0 \rightarrow \epsilon ax \geq 1 \rightarrow ax \geq \frac{1}{\epsilon}$$

$$x \in \left(-\infty, -\frac{1}{\epsilon} \right] \cup \left[\frac{1}{\epsilon}, +\infty \right)$$

(4)

$$f(x) = \sqrt{mx^2 + \tau x + 1} \quad mx^2 + \tau x + 1 \geq 0 \quad (\tau m)^2 - \epsilon(m)(1) \leq 0$$

$$\tau m^2 - \epsilon m \leq 0 \quad \epsilon m(m-1) \leq 0 \quad \frac{\tau}{\tau} \frac{\epsilon}{\epsilon} \frac{m}{m} \frac{m-1}{m-1} \leq 0$$

$$m \in [0, 1]$$

(5)

(4)

$$f(x) = \begin{cases} \frac{\epsilon ax - 1}{\tau m - 1} & ; x \neq a \\ \tau ax + k & ; x = \frac{1}{\tau} \end{cases}$$

$$g(x) = \tau x + 1$$

$$g\left(\frac{1}{\tau}\right) = \tau\left(\frac{1}{\tau}\right) + k \Rightarrow \epsilon\left(\frac{1}{\tau}\right) + 1 = \epsilon\left(\frac{1}{\tau}\right) + k$$

$$\tau x - 1 = 0 \quad \tau m - 1 \quad x = \frac{1}{\tau} \Rightarrow a = \frac{1}{\tau} \quad a + k = \frac{1}{\tau} + 0 = \frac{1}{\tau}$$

(5)

(4)

$$f(x) = \begin{cases} \frac{9ax - \epsilon}{\tau m + \tau} & ; x \neq \frac{\tau}{\tau} \\ \tau ax + \tau & ; x = -\frac{\tau}{\tau} \end{cases}$$

$$g(x) = \tau a + b$$

$$x = -\frac{\tau}{\tau} \Rightarrow \epsilon\left(-\frac{\tau}{\tau}\right) + a + \tau = \epsilon\left(-\frac{\tau}{\tau}\right) + b$$

$$-\tau a + \tau = -\tau + b \quad (1)$$

$$x = 1 \Rightarrow \frac{9 - \epsilon}{\tau + \tau} = \tau + b \Rightarrow 1 = \tau + b \quad (b = -\tau) \quad (5)$$

$$(1), (5) \Rightarrow -\tau a + \tau = -\tau - \tau \Rightarrow -\tau a = -4$$

$$a = \frac{4}{\tau}$$

$$a - b = \tau + \tau = 2\tau = 8$$

(4)

$$g(x) = f(x) \Rightarrow \tau + \tau = \tau a + \tau$$

$$\tau \epsilon^2 + \tau a - \epsilon = 0 \Rightarrow a + a - \tau = 0$$

$$\underbrace{(a + \tau)}_{-\tau} \underbrace{(a - 1)}_{+1} = 0$$

$$a = +1, -\tau$$

(5)

(4)