

$$f(x) = \sqrt{\varepsilon - \frac{1}{x^2}} \Rightarrow f(x) = \sqrt{\frac{\varepsilon x^2 - 1}{x^2}} \quad (2)$$

$$\Rightarrow \frac{-\frac{1}{x} \cdot 0}{+\frac{1}{x} + \frac{1}{x} - \frac{1}{x}} \Rightarrow D_f = \left(-\infty, -\frac{1}{\sqrt{\varepsilon}}\right] \cup \left[\frac{1}{\sqrt{\varepsilon}}, +\infty\right)$$

$$\sqrt{mx^2 + \gamma mx + 1} = f(x) \Rightarrow mx^2 + \gamma mx + 1 > 0 \quad \begin{matrix} m < 0 \rightarrow \Delta < 0 \\ m > 0 \rightarrow \Delta \geq 0 \end{matrix}$$

$$\Rightarrow \Delta < 0 \Rightarrow \varepsilon m^2 - \varepsilon m < 0 \Rightarrow \frac{0}{+\frac{1}{\varepsilon} - \frac{1}{\varepsilon}} \quad m \in (0, 1)$$

$$1) \text{ min } \in \mathbb{R}^+ \Rightarrow m > 0 \quad \Delta \rightarrow \frac{1}{\varepsilon} - \frac{1}{\varepsilon} \rightarrow \frac{1}{\varepsilon} - \frac{1}{\varepsilon} \rightarrow m \in (0, 1)$$

$$f(x) = \begin{cases} \frac{\varepsilon x^2 - 1}{\gamma x - 1} & : x \neq \frac{1}{\gamma} \\ \varepsilon x + k & : x = \frac{1}{\gamma} \end{cases} \Rightarrow \begin{cases} \varepsilon x^2 - 1 = 0 \Rightarrow x = \frac{1}{\gamma} \\ \varepsilon x + k = \frac{1}{\gamma} \end{cases}$$

$$g(x) = \varepsilon x + k \Rightarrow g\left(\frac{1}{\gamma}\right) = \frac{1}{\gamma} \Rightarrow \varepsilon \frac{1}{\gamma} + k = \frac{1}{\gamma} \Rightarrow k = 0$$

$$g(x) = \gamma x + b$$

$$f(x) = \begin{cases} \frac{\varepsilon x^2 - \varepsilon}{\gamma x + \gamma} & : x \neq -\frac{\gamma}{\varepsilon} \\ \gamma a x + \gamma & : x = -\frac{\gamma}{\varepsilon} \end{cases}$$

$$g\left(-\frac{\gamma}{\varepsilon}\right) = -\gamma + b = \frac{10}{\varepsilon} \Rightarrow b = \frac{14}{\varepsilon} \Rightarrow a - b = -\frac{\gamma}{\varepsilon} - \frac{14}{\varepsilon} = -\frac{11}{\varepsilon}$$

$$g(x) = x + \gamma \Rightarrow g(x) = \varepsilon$$

$$f(x) = \begin{cases} \frac{x^2 - \varepsilon}{x - \gamma} & : x \neq \gamma \\ \gamma a^2 + a x & : x = \gamma \end{cases}$$

$$\Rightarrow a^2 + a - \gamma = 0 \Rightarrow a = 1, a = -\gamma$$

ikhtiwaz, $f(u) = g(u)$:

① $x = -\frac{\gamma}{\varepsilon} \rightarrow f(x) = g(x) \rightarrow \frac{\varepsilon x^2 - \varepsilon}{\gamma x + \gamma} = \frac{(\gamma x - \gamma)(\gamma x + \gamma)}{\gamma x + \gamma} = \gamma x - \gamma \rightarrow b = -\gamma$

② $f\left(-\frac{\gamma}{\varepsilon}\right) = g\left(-\frac{\gamma}{\varepsilon}\right) \rightarrow \begin{cases} f\left(-\frac{\gamma}{\varepsilon}\right) = \gamma a^2 + a\left(-\frac{\gamma}{\varepsilon}\right) = -\gamma a + \gamma \rightarrow a = \gamma \\ g\left(-\frac{\gamma}{\varepsilon}\right) = \gamma\left(-\frac{\gamma}{\varepsilon}\right) - \gamma = -\gamma \end{cases} \Rightarrow a = \gamma, a - b = a$