

$$\begin{aligned} & \frac{x-1}{x} - \frac{x}{x-1} \cdot \frac{x-1}{x} \\ & \frac{x-1}{x} - \frac{x-1}{1} \cdot \frac{x-1}{x} \end{aligned}$$

$$\begin{array}{l} \text{(c)} \quad \frac{x - y}{x^2 + y^2 - 1} \\ \frac{x - y}{x^2 + y^2 - 1} \xrightarrow{x - y} \frac{x^2 + y^2 - 1}{x^2 + y^2 - 1} \\ \frac{x^2 + y^2 - 1}{x^2 + y^2 - 1} \xrightarrow{x^2 + y^2 - 1} 1 \end{array}$$

$$\begin{aligned} & \left(\frac{1}{2}x - a \right) (x^2 - x^2) \cdot 1 \\ & \frac{1}{2}x = a \\ & x^2 - x^2 = x^2 \\ & x = -x \\ & x^2 = a \\ & x = \frac{a}{x} \end{aligned}$$

$$\begin{array}{l} \text{2.) } x-1 \geq 0 \\ x \geq 1 \end{array} \quad \begin{array}{l} \sqrt{x-1} \leq 4 \\ x-1 \leq 16 \\ x \leq 17 \end{array} \quad \begin{array}{l} x \in [1, 17] \end{array}$$

$$\begin{array}{r} 13 \\ 3 \\ \hline 16 \end{array}$$

1, 2

$$\begin{array}{c}
 \begin{array}{c}
 x^2 - x - y \quad \gamma_0 \\
 (x - y)(x + 1) \quad \gamma_0 \\
 \hline
 -1 \quad y \\
 + \quad x - y +
 \end{array}
 \quad
 \begin{array}{c}
 (-\infty, -1) \cup (1, +\infty) \\
 \cup \\
 (-\infty, -1) \cup (1, +\infty)
 \end{array}
 \end{array}$$

$$\begin{aligned} -x^y + ax + y &= 0 \\ -x^y + ax + y &= 0 \\ x^y - ax - y &= 0 \end{aligned}$$

③

$$f(x) - x \geq 0$$
$$x_1 \rightarrow f(x) = 1^2 x - 1$$
$$f(x) - x = 1^2 x - 1$$
$$1^2 x - 1 \geq 0$$
$$1^2 x \geq 1 \quad x \geq 1$$
$$[1, +\infty)$$
$$x_1 \rightarrow f(x) = 1^2 x + 1^0$$
$$f(x) - x = x + 1^0$$
$$x + 1^0 \geq 1$$
$$x \geq -1$$
$$[-1, +\infty)$$
$$x \rightarrow [-1^0, +\infty)$$

$$\sin \frac{\pi}{r} + \cos r \pi = \sqrt{\frac{r}{r}} + 1 = \frac{r + \sqrt{r}}{r}$$

$$r \left(\frac{r + \sqrt{r}}{r} \right)' - r \left(\frac{r + \sqrt{r}}{r} \right) = \frac{r + \sqrt{r}}{r} + \frac{-r - \sqrt{r}}{r} = -\frac{1}{r}$$

$$f(a) = \frac{a+1}{a-1} \quad f(f(a)) = \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{a + \frac{a+1}{a-1}}{\frac{a+1}{a-1} - 1} = \frac{r}{r} = a$$

$$g(u) = \sqrt{a^u - 1}$$

$$f(g(a)) = f(t) = t' \cdot dt = -dt$$

$$t' \cdot dt + dt = 0$$

$$(t-r)' = 0 \quad t=r \rightarrow \sqrt{a^t - 1} = r$$

$$a^r - 1 = r \quad a^r = a \quad a = \pm \sqrt{a}$$

④

$$x + y = k$$

$$x = 1 \quad f(k) = (1)' - \partial(1) + u = r$$

$$x + y = -y$$

$$y = -u \quad f(-y) = (-u)' - \partial(-u) + u = v^2$$

$$y'x' = 1 \cdot 1$$

⑤

$$k \cos^r x + \partial \cos x = r' \partial \rightarrow r t' \partial t = r' \partial$$

$$\cos x = t$$

$$At' + 1 \cdot t - v = 0$$

$$(rt-v)(rt+v) = 0$$

$$t = \frac{1}{r} \cdot \frac{v}{r} = \frac{v}{r} \quad \text{USE}$$

$$\cos x = \frac{1}{r}$$

$$\tan^r x = \frac{\sin^r x}{\cos^r x} = \frac{1 - \cos^2 x}{\cos^2 x} = \frac{1 - \frac{1}{r^2}}{\frac{1}{r^2}} = \frac{r^2}{r^2} - \frac{1}{r^2} = r$$

$$f(r/a) = r$$

⑥

ج-۲) $\sqrt[4]{x-1} + \sqrt{y+1} = 3$ و $\underbrace{\sqrt{y+1}}_{\text{همواره نامنفی!}} = \underbrace{3 - \sqrt[4]{x-1}}_{\text{همواره نامنفی!}} \rightarrow 3 - \sqrt[4]{x-1} \geq 0 \rightarrow \sqrt[4]{x-1} \leq 3 \rightarrow x \leq 82$

$\downarrow$
 $x-1 \geq 0 \rightarrow x \geq 1 \quad \text{I}$

I, II $\rightarrow 1 \leq x \leq 82 \rightarrow D_f = [1, 82]$