

کتاب انوری

الف) $\sqrt{\frac{x^2 - 1}{x(x-1)}} = \sqrt{\frac{-1}{x(x-1)}} + \frac{0}{1} + \frac{1}{1}$ $D_f = (-\infty, 0) \cup [\frac{1}{2}, 1)$

ب) $\frac{x^2 - 1}{(x+1)x} \rightarrow x \neq 0, -1, 1, -2$ $D_f = \mathbb{R} - \{\pm 1, 0, -2, -\frac{1}{2}\}$

الف) $(\frac{1}{x})^2 - 9 \geq 0$ $x = -2 \rightarrow \frac{1}{4} - 9 \geq 0$ $D_f = (-\infty, -2] \cup [\frac{1}{3}, +\infty)$

ب) $\sqrt{x-1} + \sqrt{y+1} = 1$ I) $x \geq 1$

II) $\sqrt{x-1} \leq 1$ $x-1 \leq 1$ $x \leq 2$ $D_f = [1, 2]$

I) $x^2 - x - 2 > 0$ $(x-2)(x+1) > 0$ $x > 2 \cup x < -1$

II) $x^2 - 1 > 0$ $(x-1)(x+1) > 0$ $x > 1 \cup x < -1$

III) $\sqrt{x^2 - 1} + 1 > 0$ $I \cap II \cap III \rightarrow D_f = (-\infty, -1) \cup (2, +\infty)$

$x = -2 \rightarrow \sqrt{1 + ax - x^2} \rightarrow 1 - 2a - 2 = 0 \rightarrow a = -\frac{1}{2}$

$x^2 - \frac{1}{2}a + 1 = 0$ $\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1}{2} \pm \sqrt{\frac{1}{4} + 1}$ $\frac{y}{x} = \frac{1}{2} \pm \sqrt{\frac{5}{4}}$

I) $x \geq 1 \rightarrow \sqrt{1+x-2x} = \sqrt{1-x} \rightarrow 1-x \geq 0 \rightarrow x \leq 1$

II) $x < 1 \rightarrow \sqrt{1+x-2x} = \sqrt{1-x} \rightarrow 1-x \geq 0 \rightarrow x \leq 1$

$\Rightarrow [-1, +\infty)$

$$f(x) = \sqrt{x^2 - 1}$$

$$f\left(\sin \frac{\pi}{p} + \cos \pi\right) = f\left(\frac{\sqrt{p}}{p} + 1\right)$$

$$\sqrt{\left(\frac{\sqrt{p}}{p} + 1\right)^2 - 1} = \sqrt{\left(\frac{p}{p^2} + 1 + \sqrt{p}\right) - 1} = \sqrt{\frac{p}{p^2} + \sqrt{p}} = \frac{1}{\sqrt{p}} + \sqrt{p} = \frac{1}{\sqrt{p}}$$

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

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

if $a \neq 1 \rightarrow D_f = \mathbb{R} - \{1\}$

$$g(a) = \sqrt{a^2 - 1}$$

$$f(g(a)) = \left(\sqrt{a^2 - 1}\right)^2 - 1 = a^2 - 1 - 1 = a^2 - 2$$

$$J^2 - f_J + 1 = 0 \quad (J-1)^2 = 0 \rightarrow \sqrt{a^2 - 1} - 1 = 0 \rightarrow a^2 - 1 = 1 \rightarrow a^2 = 2 \rightarrow a = \pm \sqrt{2}$$

$$f(r) = 1 - \omega + \gamma = r$$

$$f(-r) = 1 - \gamma + \omega = -r$$

$$x + r = r \rightarrow x = 1$$

$$x + r = -r \rightarrow x = -1$$

$$r \cos x + \omega \cos x = r, \omega$$

$$r \cos x + \omega \cos x = r, \omega = 0$$

$$\cos x + \omega \cos x - 1 = 0$$

$$(\cos x + 1)(\cos x - 1) = 0$$

$$\cos x = \frac{1}{2}$$

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

$$\rightarrow \tan x = \sqrt{r} \rightarrow \tan \pi = \sqrt{r} \rightarrow f(r, \omega) = \sqrt{r}$$