

مدی پان شاری

یازدهم سپر B

تکلیف شماره ۵
۲. آفرین های نوستر

(1) $f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}}$ $x \neq 1$ $x \neq 0$ $\sqrt{\frac{(x-1)^2 - x^2}{x^2 - x}}$ $\frac{0}{+} - \frac{1}{-} + \frac{1}{+} -$

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

$f(x) = \frac{1}{x+1} - \frac{x}{x}$ $x \neq -1$ $x \neq 0$ $\frac{x-2x-2}{x^2+x} = \frac{-x-2}{x^2+x}$
 $\frac{x}{x^2-1} + \frac{1}{x^2+2}$ $x \neq 1$ $x \neq -2$ $\frac{x^2x+4+x-1}{x^2+x-2} = \frac{4x+3}{x^2+x-2}$

$x \neq -2 \Rightarrow x \neq -\frac{2}{x}$

$Df = \mathbb{R} - \{-1, 0, 1, -2, -\frac{2}{x}\}$

(2) $f(x) = \sqrt{((\frac{1}{x})^2 - 9)(x^2 - 4)}$ $\frac{-2}{+} - \frac{2}{+} +$

$\Rightarrow Df = (-\infty, -2] \cup [\frac{2}{x}, \infty)$

$$\textcircled{1} \sqrt{x-1} + \sqrt{y+1} = r \rightarrow$$

$$\sqrt{y+1} = r - \sqrt{x-1} \quad \textcircled{5} \text{obv} \rightarrow$$

$$y+1 = r^2 - 2r\sqrt{x-1} + x-1$$

$$y = 1 + \sqrt{x-1} - 2r\sqrt{x-1} \geq 0$$

$$\textcircled{5} \sqrt{x-1} \leq r \xrightarrow{\text{obv}} x-1 \leq 1 \rightarrow x \leq 12$$

$$\left. \begin{array}{l} \textcircled{1} \textcircled{12} \\ D_y = [1, 12] \end{array} \right\}$$

← (12) Obv

$$f(x) = \frac{\log(x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \quad x^2 - x - 2 > 0 \quad (x-2)(x+1) > 0 \quad (x$$

$$Df = (-\infty, -1) \cup (2, +\infty)$$

$$\frac{-1}{+} \frac{2}{-} \frac{+}{+}$$

$$\sqrt{x^2 - 1} \Rightarrow x^2 \geq 1 \Rightarrow \frac{-1}{+} \frac{1}{-} \frac{+}{+} \quad (-\infty, -1] \cup [1, +\infty) \quad Df = (-\infty, -1) \cup (2, +\infty)$$

$$f(x) = \sqrt{x + ax - x^2} \quad [-r, b] \rightarrow ax^2 + bx + c \Rightarrow S = -\frac{b}{a}, P = \frac{c}{a}$$

$$\Rightarrow a = -1 \Rightarrow S = -b, P = -c$$

$$\Rightarrow b + (-r) = a, \quad -b = -r \Rightarrow b = \frac{r}{-1}, a = -\frac{1}{r} \Rightarrow -\frac{1}{r} + \frac{r}{-1} = 1$$

$$\left. \begin{array}{l} x^2 - x \geq x \Rightarrow x^2 \geq 2x \Rightarrow x \geq 1 \\ x^2 + x \geq x \Rightarrow x \leq -x \Rightarrow -x \leq x < 1 \end{array} \right\} \text{قبل } Dg = [-r, +\infty)$$

$$f(x) \geq x$$

$$f(x) = x^2 - \epsilon x \Rightarrow f\left(\sin \frac{\pi}{2} + \cos 2\pi\right) = ? \quad (9)$$

$$\Rightarrow f\left(\frac{\sqrt{5}}{2} + 1\right) = \left(\frac{\sqrt{5}}{2} + 1\right)^2 - \epsilon\left(\frac{\sqrt{5}}{2} + 1\right) = \frac{5}{4} + \sqrt{5} + 1 - \frac{\sqrt{5}}{2} - \epsilon = \frac{9}{4} - \frac{\sqrt{5}}{2} - \epsilon$$

$$f(x) = \frac{x+1}{x-1}, f(f(a)) = a \quad f\left(\frac{a+1}{a-1}\right) = a \quad (10)$$

$$\frac{a+1+a-1}{a-1} = a \Rightarrow \frac{2a}{a-1} = \frac{2a}{a-1} \Rightarrow a = a$$

هو مقدار a بجز 1 خارج

$$D_a = \mathbb{R} - \{1\}$$

$$f(g(a)) = -\epsilon \Rightarrow f(\sqrt{a^2-1}) = -\epsilon \cdot \sqrt{a^2-1} = -\epsilon$$

$$t^2 - \epsilon t + \epsilon = 0 \Rightarrow (t-\epsilon)^2 = 0 \Rightarrow t = \epsilon$$

$$\Rightarrow \sqrt{a^2-1} = \epsilon \Rightarrow a^2 = \epsilon^2 + 1 \Rightarrow a = \pm \sqrt{\epsilon^2 + 1}$$

$$f(x+y) = x^2 - \Delta x + y \Rightarrow x+y = \epsilon \Rightarrow x = -y \Rightarrow f(-y) =$$

$$\epsilon y + \epsilon_0 + y = \sqrt{5} \quad f(x+y) = x^2 + \Delta x + y \Rightarrow x+y = \epsilon \Rightarrow x = 1$$

$$\Rightarrow f(\epsilon) = 1 - \Delta + y = \epsilon \quad f(\epsilon) \times f(-\epsilon) = \epsilon \times \sqrt{5} = 1 \quad (11)$$

$$\epsilon \cos^2 x + \Delta \cos x = \frac{\sqrt{5}}{2} \Rightarrow \cos x = \frac{1}{\epsilon} \Rightarrow \tan^2 x = \left(\frac{\sqrt{5}}{2}\right)^2 = \frac{5}{4} \quad (12)$$