

سنا خدا
(بیازدهم دفترانه A) <ستایش خدایی> تالیف: 4

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

(ب) $f(x) = \frac{\frac{1}{x+1} - \frac{2}{x}}{\frac{3}{x-1} + \frac{1}{x+2}}$ $D = \mathbb{R} - \{-1, 0, 1, -2, -\frac{5}{2}\}$

$\frac{x-2x-2}{(x+1)x} = \frac{-x-2}{x^2+x} = \frac{(x^2+x-2)(-x-2)}{(x^2+x)(x^2+x-2)}$
 $\frac{3x+9+x-1}{(x-1)(x+2)} = \frac{4x+8}{x^2+x-2}$
 $\frac{-5}{2} \quad 0, -1$

(الف) $f(x) = \sqrt{((\frac{1}{x})^2 - 9)(3x^2 - 4x)}$ $x = -2$ دامنه؟
 $(3 - x - 3x^2)(12 - 2x^2) \geq 0$
 $\frac{5}{2} = x$

(ب) $\sqrt[4]{x-1} + \sqrt{y+1} = 3$ $x-1 \geq 0$ $(x \geq 1)$

$\sqrt{y+1} = 3 - \sqrt{x-1}$
 $3 \geq \sqrt{x-1}$
 $-1 \leq x-1 \leq 1$
 $D = [1, 2]$

$1 \geq |x-1| \quad -1 \leq x-1 \leq 1$

PARAMOUNT $-1 \leq x \leq 2$ II

(3) دامنه؟

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

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

$$x^2 - x - 2 > 0$$

$$(-1, 2)$$

$$\begin{array}{c|c|c} + & - & + \end{array}$$

$$I: (-\infty, -1) \cup (2, +\infty)$$

$$II: (-\infty, -1] \cup [2, +\infty)$$

$$x^2 - 1 > 0 \quad x^2 > 1 \quad x > 1 \quad x < -1$$

(4) اگر از منابع $\sqrt{3+ax-x^2}$ بازوی $[-2, b]$ باشد مقدار $a+b$ را بیابید؟

$$-x^2 + ax + 3 > 0$$

$$-x^2 - \frac{1}{r}x + 3$$

$$\begin{array}{c|c|c} + & - & - \end{array}$$

$$b = \frac{3}{r}$$

$$a+b=1$$

$$x = -2 \rightarrow 3 - 2a - \varepsilon = 0$$

$$-2a = 1$$

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

$$\Delta = \frac{1}{\varepsilon} - \varepsilon x - 1 \alpha 3 = \frac{1+4\alpha}{\varepsilon} = \frac{\varepsilon 9}{\varepsilon}$$

$$\frac{1}{r} \pm \frac{\sqrt{r}}{r}$$

$$\begin{array}{c} -2 \\ 3 \\ 2 \end{array}$$

$$f(x) = \begin{cases} 3x-2 & x \geq 1 \\ 2x+3 & x < 1 \end{cases}$$

(5) دامنه تابع چیست؟ $(g(x))$

$$g(x) = \sqrt{f(x) - x}$$

مقدار x که از عددی x بزرگتر باشد $f(x) \geq x \rightarrow$ $x = -3$ براساس

$$[-3, +\infty)$$

Q. 1. Let $f(x) = f(-x) + a$, $f(x) = \begin{cases} (a+1)(x+1) & x > 1 \\ xa + 1 & x \leq 1 \end{cases}$ (4)

$$f(a+1) = f(-a-1) + a$$

$$(a+1)(a+1) = (-a-1)(-a-1) + a$$

$$a^2 + 2a + 1 = a^2 + 2a + 1 + a$$

$$a = -1$$

Q. 2. Let $f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 1$ (5)

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$$\sqrt{x} \left(\sqrt{x} - 1 + \sqrt{x} + 1 \right) + 1 = 2\sqrt{x} + 1$$

$$r f(x) - r f(-x) = \epsilon x^r - x \wedge$$

$$C = f(x) \quad \textcircled{\wedge}$$

$$\textcircled{x} \rightarrow r f(x) - r f(-x) = \epsilon x^r - x$$

$$\textcircled{-x} \rightarrow r f(-x) - r f(x) = \epsilon x^r - x$$

$$- \Delta f(x) = \epsilon x^r + x$$

$$f(x) = -\epsilon x^r - \frac{1}{\Delta} x$$

$$f(0) = C \quad (x+r) f(x) - r x f(x+r) = \epsilon x^r - m x^{m-1} \quad \textcircled{9}$$

$$x+r = r$$

$$r f(0) - r x f(r) = m - 1 \quad \frac{r \Delta}{r}$$

$$r f(0) = m - 1$$

$$f(0) = \frac{m-1}{r} = \frac{r \Delta}{r} \frac{\Delta m + 1 \Delta}{r \Delta r} = \frac{m-1}{r}$$

$$x+r=0 \quad \textcircled{x=-r} \quad 9m-r = \Delta m + 1 \Delta$$

$$9 f(0) = 19 - m x - r + m - 1 \quad r \Delta m = 1 \Delta \quad \textcircled{m = \frac{9}{r}}$$

$$f(0) = \frac{\Delta m + 1 \Delta}{9} \quad \textcircled{f(0) = \frac{r \Delta}{r}}$$

۱۰) f تابعی خطی است و $f(x) + f(\frac{1}{x}) = \frac{3x^2 - 12x + 3}{x}$ باشد.

$$P = f(-1)$$

$$f(x) = ax + b = 3x - 9 \xrightarrow{f(-1)} 3 - 9 = -6$$

$$ax + b + \frac{a}{x} + b = \frac{3x^2 - 12x + 3}{x}$$

$$ax^2 + a + 2bx = 3x^2 - 12x + 3$$

$$a = 3$$

$$-12 = 2b \rightarrow b = -6$$