

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

$$\rightarrow \frac{-2x+1}{x(x-1)} \geq 0 \quad \frac{1}{x} - \frac{1}{x-1} \geq 0 \quad D_f = (-\infty, 0) \cup \left[\frac{1}{2}, 1\right)$$

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

$$D(f) = \mathbb{R} - \left\{-2, -\frac{2}{x}, -1, 0, 1\right\}$$

$$1) \sqrt{\left(\left(\frac{1}{x}\right)^x - 9\right)(x^2 - 9)} \rightarrow \left(\frac{1}{x}\right)^x - 9 > 0 \Rightarrow \left(\frac{1}{x}\right)^x > 9 \rightarrow x < -2$$

$$x^2 - 9 > 0 \rightarrow x^2 > 9 \rightarrow x > 3 \text{ or } x < -3 \quad D(f) = (-\infty, -3) \cup \left[\frac{2}{3}, +\infty\right)$$

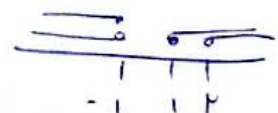
$$2) \sqrt{x-1} + \sqrt{y+1} = 2 \rightarrow \sqrt{y+1} = 2 - \sqrt{x-1} \Rightarrow 2 - \sqrt{x-1} \geq 0$$

$$\sqrt{x-1} \leq 2 \xrightarrow{f(x)} x-1 \leq 4 \rightarrow x-1 \geq 0 \rightarrow x \geq 1 \quad x \leq 5$$

$$D(f) = [1, 5]$$

$$f(x) = \frac{\log_r (x^2 - x - 2)}{\sqrt{x^2 - 1} + 1} \quad x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \Rightarrow \frac{-1}{2} < x < 2$$

$$x^2 - 1 > 0 \rightarrow x^2 > 1 \quad x > 1 \text{ or } x < -1$$



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

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

$$D(f) = [-2, 1]$$

$$a+b \geq 0$$

$$-x^2 + x + 2 \geq 0$$

$$x^2 - x - 2 \leq 0$$

$$(x+2)(x-1) \rightarrow$$

$$-2 \leq x \leq 1$$

$$b = \frac{x}{x} = \frac{x}{x}$$

$$(x+2)(x-\frac{x}{x}) \rightarrow x^2 + 1 - \frac{x^2}{x} \leq 0$$

$$a = \frac{1}{x}$$

$$a + b = \frac{x}{x} - \frac{1}{x} \geq 0$$

۵. برای اعداد کوچکتر از ۱ از

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

۳- به دو برقراره وی بزرگتر ۱

صمداره برقراره

$[-3, +\infty)$

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

$$\begin{aligned} x + \epsilon &\geq a \\ x - \epsilon &\geq a \\ x &\geq -\epsilon \end{aligned} \quad f(x) \geq a$$

$$f(n) = \begin{cases} (a+1)(n+r) & n > 1 \\ r a + r n & n \leq 1 \end{cases} \quad r(a+1)(\Delta+r) = (r a + r) - r + a$$

$$\gamma f(a) = f(-\gamma) + a \quad a = 0 \quad \gamma(\delta a + \gamma a + \delta + \gamma) = \xi a - \xi$$

$$\sqrt{a^2 - \frac{9}{a}} \quad \leftarrow \quad \begin{aligned} 1(a+1) \cdot (a+1) \\ 1 \cdot a = -1 \end{aligned}$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + r \quad \sqrt{x_1} + \left( \frac{1}{\sqrt{x_1}} \right)^{\sqrt{x}} + r + \sqrt{x_r} + \left( \frac{1}{\sqrt{x_r}} \right)^{\sqrt{x_1}} + r$$

$$\int \frac{x_1}{(x-\sqrt{x})^2} dx + \int \frac{x_2}{(x+\sqrt{x})^2} dx$$

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

$$= \frac{2}{x} + \frac{1}{\sqrt{x}} \left( \sqrt{x-\sqrt{x}} + \sqrt{x+\sqrt{x}} \right) \rightarrow A^2 = 9 \rightarrow A = 3$$

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

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

$$f(x) = x^m \quad \text{und} \quad f'(x) = mx^{m-1}$$

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

$$\frac{m-1}{r} = \frac{\Delta m + \Delta}{y}$$

$$11m - 6 = 10m + 4$$

$$m = \frac{10}{1} = 10$$

$$n^{2-r} \rightarrow y^l(.) = 1/y + y^m + y^{m-1} \rightarrow 1/y + 0/y$$

$$\boxed{q \neq b} \rightarrow f(0) = \frac{2m+12}{4} \rightarrow \frac{2 \cdot \frac{9}{4} - 1}{\frac{4}{2}} = \frac{\frac{9}{2}}{\frac{4}{2}} \Rightarrow f(0) = \left[ \frac{9}{4} \right]$$

$f(x) \rightarrow a \neq b$

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$$f(x) + f\left(\frac{1}{x}\right) \Rightarrow \frac{2x^2 - 12x + 3}{x} \rightarrow x = -1 \quad \text{or} \quad f(-1) = \frac{14 + 12 + 3}{-1}$$

$$f(-1) \Rightarrow \quad \text{or} \quad f(-1) = -14$$

$$f(-1) = -9$$