

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

$$\frac{0}{+} \frac{1}{-} \frac{1}{+} \frac{1}{-} \rightarrow (-\infty, 0) \cup [\frac{1}{2}, +\infty) \text{ اف}$$

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

$$\Rightarrow 12 - \left\{ -2, -\frac{5}{2}, -1, 0, 1 \right\}$$

$$f(x) = \sqrt{\left(\left(\frac{1}{x}\right)^x - 9\right)(22 - 4^x)} \rightarrow \frac{-2 \log_4 22}{+ \frac{1}{x} - \frac{1}{x} +} \rightarrow (-\infty, -2] \cup [\log_4 22, +\infty) \text{ اف}$$

$$-2 = \frac{1}{x}, \log_4 22 = \frac{1}{x}$$

$$\sqrt{x-1} + \sqrt{y+1} = 3 \rightarrow \sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow y+1 = \sqrt{x-1} - 9 \sqrt{x-1} + 9$$

$$y = \sqrt{x-1} - 9 \sqrt{x-1} + 8 \rightarrow \sqrt{x-1} \geq 0 \rightarrow x \geq 1 \rightarrow (1, +\infty) \text{ اف}$$

$$\log_5 \frac{x^2 - x - 2}{\sqrt{x^2 - 1} + 1} \rightarrow x^2 - x - 2 \geq 0 \rightarrow (x-2)(x+1) \geq 0 \rightarrow \frac{-1}{+} \frac{2}{-} \frac{+}{+}$$

$$\frac{\sqrt{x^2 - 1} + 1}{= 0} \rightarrow (-\infty, -1) \cup (2, +\infty) \rightarrow (-\infty, -1) \cup (2, +\infty) \text{ اشتدک}$$

$$\sqrt{x^2 - 1} \geq 0 \rightarrow (x-1)(x+1) \geq 0 \rightarrow \frac{-1}{+} \frac{1}{-} \frac{+}{+} \rightarrow (-\infty, -1] \cup [1, +\infty)$$

$$f(x) = \sqrt{-x^2 + ax + 3} \xrightarrow{\text{محد}} [-2, b] \xrightarrow{x=-2} -4 - 2a + 3 = 0 \rightarrow -2a - 1 = 0$$

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

$$-x^2 - \frac{1}{2}x + 3 = 0 \rightarrow \frac{\frac{1}{2} \pm \sqrt{\frac{1}{4} - 12}}{-2} = 2 - 2 \pm \left(\frac{5}{2}\right) = b \quad a + b = -\frac{1}{2} + \frac{5}{2} = 2$$

$$f(x) = \begin{cases} 3x-2 & x \geq 1 \\ 2x+3 & x < 1 \end{cases} \rightarrow (-\infty, -2] \cup [1, +\infty) \leftarrow \frac{-2}{+} \frac{1}{-} \frac{+}{+}$$

$$g(x) = \sqrt{f(x) - x} \geq 0 \rightarrow \begin{cases} 3x-2 = x \rightarrow 2x-2 = 0 \rightarrow x=1 \\ 2x+3 = x \rightarrow x+3 = 0 \rightarrow x=-3 \end{cases}$$

$$f(x) = \mu x^2 - \Sigma x \rightarrow \mu x(x - \mu)$$

$$f(\sin \frac{\pi}{r} + \cos r\pi) \rightarrow f\left(\frac{\sqrt{r}}{r} + 1\right) = r\left(\frac{\sqrt{r}}{r} + 1\right)\left(\frac{\sqrt{r}}{r} + 1\right)^{-1}$$

$$\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\cos \gamma \pi = 1$$

$$r \left(\frac{1}{\frac{1}{r}} - 1 \right) = \frac{-1}{r} \leftarrow$$

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

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

جواب ← $\mathbb{R} - \{1\}$

$$f(x) = x^2 - 2x$$

$$f(x) = x^2 - \varepsilon x \quad f(g(a)) = -\varepsilon$$

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

$$f(x) = x^2 - 8x + 16 = 0 \rightarrow x^2 - 8x + 16 = 0 \rightarrow (x-4)^2 = 0 \rightarrow \underline{x=4}$$

$$g(a) \equiv r \rightarrow \sqrt{a^r - 1} = r \rightarrow a^r - 1 = r^2 \rightarrow a^r = \Delta \rightarrow \boxed{a = \pm \sqrt[r]{\Delta}}$$

$$f(x+r) = x^p - \omega x + q$$

$$f(x) \xrightarrow{x=1} 1 - \omega + 9 = \underline{\underline{2}}$$

$$f(x) \xrightarrow{x=1} 1 - \omega + 9 = \underline{\underline{2}} \quad f(2) \times f(-2) = 4 \times 2 = \underline{\underline{8}}$$

$$f(-r) \xrightarrow{xz-y} yq + r_0 + yz \underline{VY}$$

$$p(\sqrt{c} \cos^2 x + d \cos x) = \tan^2 x$$

$$f(r, \omega) \rightarrow r \cos^2 \alpha + \omega \cos \alpha = r_0 / \omega \rightarrow r \cos^2 \alpha + \omega \cos \alpha - r_0 / \omega = 0 \rightarrow$$

$$\Delta = 2\omega + \omega \approx 1 \rightarrow \frac{-\omega \pm \sqrt{1}}{1} \rightarrow \frac{-1}{1}, \frac{1}{1} \quad \text{جواب} \quad \tan^2 \theta_0 = (\sqrt{3})^2 = 3$$

غَفَقَ = $\cos x$ باید بین ۱- و ۱ باشد