

المصفوفات

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

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

$$\rightarrow \frac{x-1}{x} \geq 0 \rightarrow \text{Def: } (-\infty, 0) \cup \left[\frac{1}{2}, 1\right)$$

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

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

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

$$\rightarrow \text{Def: } \mathbb{R} - \left\{0, -1, 1, -2, -\frac{1}{3}\right\}$$

الف) $f(x) = \sqrt{\left[\left(\frac{1}{x}\right)^n - 9\right][x^2 - x^n]}$

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$$\rightarrow \left[\left(\frac{1}{x}\right)^n - 9\right][x^2 - x^n] > 0 \rightarrow \left(\frac{1}{x}\right)^n > 9 \rightarrow x \leq -\frac{1}{3}$$

$$x^2 - x^n > 0 \rightarrow x^n \leq \frac{x^2}{x^2} \rightarrow x \leq \frac{1}{x}$$

$$\rightarrow Df: (-\infty, -\frac{1}{3}] \cup \left[\frac{1}{3}, +\infty\right)$$

ب) $\sqrt[n]{x-1} + \sqrt{y+1} \leq 3 \rightarrow \sqrt{y+1} \leq 3 - \sqrt[n]{x-1}$

$$\rightarrow 3 - \sqrt[n]{x-1} \geq 0 \rightarrow x-1 \geq 0 \rightarrow \sqrt[n]{x-1} \leq 3 \rightarrow x-1 \leq 27$$

$$\rightarrow x \leq 28 \rightarrow Df: [1, 28]$$

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

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$$\sqrt{x^2-1} + 1 \neq 0 \quad \text{مقامه در ٥-١}$$

$$x^2 - 1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1, x < -1$$

$$\rightarrow Df: (-\infty, -1) \cup (1, +\infty)$$

$$\underline{u = -1} \rightarrow f(u)_{s_0} \rightarrow 1 - \gamma a - F_{s_0} \rightarrow -1 - \gamma a_{s_0} \text{ ~~-F
$$\rightarrow a_{s_0} = 0/\Delta$$~~$$

$$\rightarrow 1' + \left(-\frac{1}{r} \times b\right) - b^r \text{ s.e.} \rightarrow -(b^r_{+0.1} \Delta b - r) \text{ s.e.}$$

$$\rightarrow -(b+y)(b-1/\Delta) \Rightarrow b - \sqrt{y^2 + 1/\Delta}$$

$$\rightarrow 1/\Delta + (-0/\Delta) = \textcircled{1} = a+b$$

$x \geq 1$ برای $2x - 2 - x \leq 2x - 2 \geq 0$ Δ - $\sqrt{x \geq 1}$ جوابی دهه

$x < 1$ برای $2x + 3 - x \leq x + 3 \geq 0 \rightarrow x \geq -3$

$\rightarrow Df = [-3, +\infty)$

$$f\left(\frac{\sqrt{r}}{r} + 1\right) = f\left(\frac{r + \sqrt{r}}{r}\right)$$

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$$f(x) = \ln\left(x - \frac{1}{x}\right) \rightarrow f\left(\frac{r + \sqrt{r}}{r}\right) = \ln\left((r + \sqrt{r})\left(\frac{\sqrt{r} - 1}{r}\right)\right)$$

$$= \frac{r - 1}{r} = -\frac{1}{r}$$

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

$$\rightarrow \frac{\frac{a+1+a-1}{a-1}}{\frac{a+1-a+1}{a-1}} = \frac{2a}{2} = a \rightarrow 2a \neq a \rightarrow a \in \mathbb{R} - \{1\}$$

~~f(a) = a^r~~ $g(a) = \sqrt{a^r - 1}$ -A

$$f(g(a)) = a^r - 1 - r\sqrt{a^r - 1} \rightarrow r\sqrt{a^r - 1} + t^r - r t + r s_0$$

$$\rightarrow (t-r)^r s_0 \rightarrow t^r - r t + r s_0 \rightarrow \sqrt{a^r - 1} \rightarrow a^r - 1 \rightarrow a^r \rightarrow a$$

$$-a \pm \sqrt{\Delta}$$

$$f(r) = f(1+r) = 1 - \Delta + \gamma = r \quad -9$$

$$f(-r) = f(-\gamma+r) = r\gamma + r_0 + \gamma = Vr$$

$$f(r) \times f(-r) = r \times Vr = 19r^2$$

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$$r \cos^2 \theta + \Delta \cos \theta = r_1 \Delta \xrightarrow{\cos \theta = t} r t^2 + \Delta t - r_1 \Delta = 0 \quad \text{--- 1.}$$

$$\rightarrow r t^2 + \Delta t - r_1 \Delta = 0 \rightarrow (t + V)(t - r) = 0 \rightarrow t < \frac{-\Delta}{r} \times \frac{1}{r} V$$

$$\rightarrow \cos \theta = \frac{1}{r} \rightarrow \tan^2 \theta = \frac{1 - \cos^2 \theta}{\cos^2 \theta} = \frac{1 - \frac{1}{r^2}}{\frac{1}{r^2}} = r^2 - 1$$

$$\rightarrow f(r, \Delta) = r$$