

بیت آفتاب

$$f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}} \geq 0$$

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

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

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

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

$$R = \left\{ 1, -1, 0, -2, -\frac{5}{2} \right\} \quad \frac{1}{x-1} \neq \frac{-1}{x+2}$$

$$-1x - 4 = x - 1$$

$$-2x = -5$$

$$x = \frac{5}{2}$$

$$f(x) = \sqrt{\left(\left(\frac{1}{x}\right)^x - 9\right)(12x - 5^x)} \geq 0$$

$$\left(\frac{1}{x}\right)^x - 9 \geq 0 \rightarrow 12^x - 12^y \geq 0$$

$$12^{x-1} \geq 12^y$$

$$x \geq y+1$$

روز تربیت بدنی و ورزش

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

7
1402

$$32 - \varepsilon^x \geq 0$$

ادامه انف ۲:

$$2^x \geq 2^{2x} \rightarrow$$

$$2x \leq x$$

$$x \leq 2/d$$

$$x \leq -2/d$$

$$\left(\frac{1}{2}\right)^x - 9 \leq 0$$

$$32 - \varepsilon^x \leq 0$$

$$2^{-x} \leq 9$$

$$2^x \leq 2^{2x}$$

$$x \geq -2$$

$$x \geq 2/d \rightarrow x \geq 2$$

$$D_f = (-\infty, -2] \cup [2/d, +\infty)$$

$$D_f = [1, 12]$$

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

$$\sqrt{x-1} \leq 3$$

$$x-1 \leq 1$$

$$x \leq 12$$

$$x-1 \geq 0 \rightarrow x \geq 1$$

$$f(x) = \log_{\varepsilon} (x^2 - x - 2)$$

$$\sqrt{x^2 - 1} + 1$$

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

$$x^2 - 1 \geq 0$$

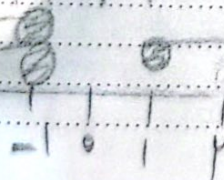
$$\frac{-1+1}{2} = 0$$

$$\frac{1 \pm 3}{2} = 2, -1$$

$$\frac{-1 \pm 2}{2} = \frac{1}{2}, -\frac{3}{2}$$

7
1402

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

$$f(x) = \sqrt{1 + ax - x^2} \quad (1)$$

$$x^2 - ax - 1 \geq 0$$

$$[-1, b]$$

$$\frac{-a \pm \sqrt{a^2 + 4}}{2}$$

$$1x^2 + x - 9 \geq 0$$

$$1x^2 + 2x - 1 = 0$$

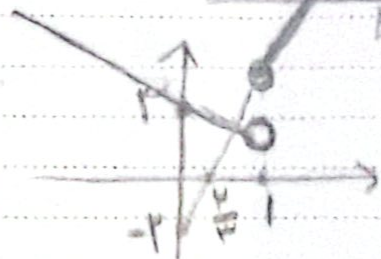
$$x^2 + x - 12 \geq 0$$

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

$$(x+3)(x-4) \rightarrow \frac{+3}{1} = b$$

$$a+b=1$$

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



$$g(x) = \sqrt{f(x) - x} \geq 0 \rightarrow f(x) \geq x$$

$$x \geq -1 \rightarrow 1x-1 \geq 0 \rightarrow x \geq 1$$

$$f(x) = 1x^2 - 1x$$

$$1x+1 \geq 0 \rightarrow x \geq -1$$

$$f\left(\sin \frac{\pi}{3} + \cos \frac{\pi}{3}\right) = f\left(\frac{\sqrt{3}}{2} + 1\right)$$

$$1\left(\frac{\sqrt{3}}{2} + 1 + \sqrt{3}\right) - 1\sqrt{3} - 1$$

$$\frac{\sqrt{3}}{2} + 1 + \sqrt{3} - \sqrt{3} - 1 = \frac{\sqrt{3}}{2} = \frac{-1}{2}$$

روز صادرات

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

$$f(f(x)) = x$$

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

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a \rightarrow \frac{a+1+a-1}{a-1-a+1} = a$$

$$\frac{2a}{2} = a \rightarrow \{a \text{ با } 1 \text{ جای } 1 \text{ و } -1\}$$

$$f(x) = x^2 - 4x \quad f(g(a)) = -4 \quad (\wedge)$$

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

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

$$f(g(a)) = (a^2 - 1) - 4\sqrt{a^2 - 1} = -4$$

$$(a^2 - 1) - 4\sqrt{a^2 - 1} + 4 = 0 \quad \sqrt{a^2 - 1} = t$$

$$t^2 - 4t + 4 = 0 \rightarrow (t - 2)^2 = 0$$

$$t = 2$$

$$\sqrt{a^2 - 1} = 2$$

$$a^2 - 1 = 4$$

$$a = \pm \sqrt{5}$$

$$f(4+3) = 4^2 - 4 + 9$$

(9)

$$f(2) \times f(3) = ? \quad 4 + 10 + 9 = 19$$

$$\downarrow$$

$$4 \rightarrow 1 - 4 + 9 = 4$$

19

$$f(5 \cos \alpha + 4 \cos \alpha) = \tan^2 \alpha$$

(11)

$$f(5/4) = ? \quad 5 \cos \alpha + 4 \cos \alpha = \frac{5}{4}$$

$$5 \cos \alpha + 4 \cos \alpha - \frac{5}{4} = 0$$

$$9 \cos \alpha + 4 \cos \alpha = 11$$

$$\cos \alpha = \frac{11}{13}$$

$$\tan^2 \left(\frac{\pi}{4} \right) = 1$$

$$\cos \alpha = \frac{1}{4} \rightarrow \alpha = 90^\circ$$

$$\cos \alpha = \frac{5}{13} \times 2$$

$$= \frac{10}{13}$$