

۲۰ (افزودن)

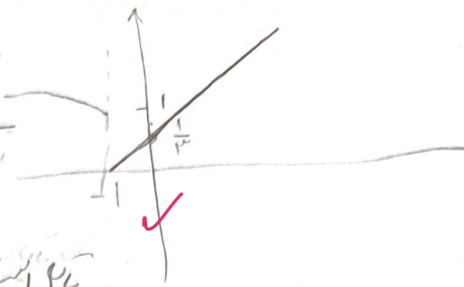
(۱) (۲)

$$x = \begin{cases} y-1 & y \geq 0 \\ -y^2 & y < 0 \end{cases}$$

$$y-1=x \rightarrow y = \frac{x+1}{1}$$

$$-y^2=x \rightarrow y = \sqrt{-x}$$

چون x هر دو منفی است پس y را باید قرار داد
یعنی است $y = \sqrt{-x}$ پس $x = -y^2$



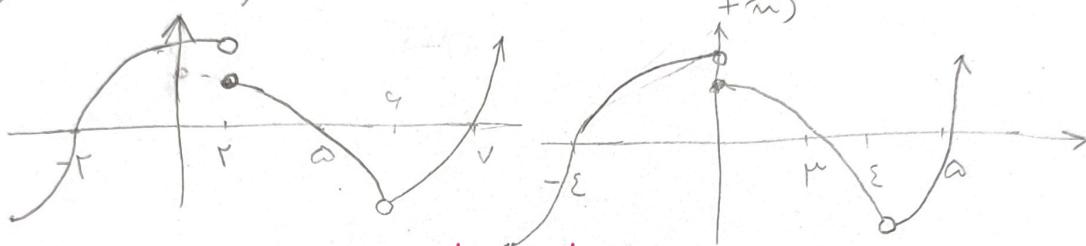
$$g(x) = \sqrt{\frac{x f(x-1)}{f(x)}}$$

$$\begin{array}{cccccccc} -2 & -1 & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ -\frac{1}{2} & + & \phi & - & \phi & + & \phi & + & \phi & + \end{array}$$

$$D_f = (-2, -1) \cup [0, 3) \cup [4, +\infty)$$

(۲) (۳)

$$\begin{array}{c} -2, 3, 4, 5 \\ -1, 1, 7 \end{array}$$



فقط دو نقطه باشد $x=4$ در دامنه f و $x=2$ در دامنه $f(x-1)$ است که در این صورت f ادامه نیابد

$$f(x) = \frac{x^2 - 3x + 2}{x^3 - 5x} = \frac{x^2 - 3x + 2}{x(x^2 - 5)} = \frac{x^2 - 3x + 2}{x(x-2)(x+2)}$$

$$\text{الف) } \mathbb{R} - \{-2, 0, 2\}$$

$$\text{ب) } \sqrt{\frac{x^2 - 3x + 2}{x^3 - 5x}} = \sqrt{\frac{x^2 - 3x + 2}{x(x^2 - 5)}}$$

$$D_f = (-2, 0) \cup (2, +\infty)$$

(۳) (۴)

$$y = \sqrt{\frac{x-2}{x^2 - 2x^2 - 1}} = \sqrt{\frac{x-2}{(x^2 - 2)(x^2 + 1)}}$$

$$\begin{array}{cccc} -2 & 0 & 2 & * \\ -\frac{1}{2} & + & \frac{1}{2} & + \end{array}$$

$$D_f = (-2, +\infty) - \{2\}$$

(۴) (۵)

$$\text{الف) } y = \frac{2x+1}{2-2[-x]} = \frac{2x+1}{2+2x}$$

$$2-2[-x] \neq 0 \rightarrow 2 \neq 2[-x] \rightarrow [-x] = 1 \rightarrow -1 \leq -x < 1 \rightarrow -1 > x \geq -1$$

$$D_f = \mathbb{R} - (-1, 1)$$

$$\text{الف) } f(x) = \sqrt{x(x^2-1)}$$

$$\begin{array}{cccc} -1 & 0 & 1 & * \\ -\frac{1}{2} & + & \frac{1}{2} & + \end{array}$$

$$D_f = (-1, 0] \cup [1, +\infty)$$

$$D_f = [1, +\infty)$$

$$D_f = [-1, 1) - \{-1\}$$

$$\text{ب) } f(x) = \sqrt{|x-2| - x^2}$$

$$\begin{array}{c} \rightarrow x > 2 \\ \sqrt{-x^2 + x - 2} \rightarrow \sqrt{-(x^2 - x + 2)} \end{array}$$

$$\begin{array}{c} \rightarrow x \leq 2 \\ \sqrt{-x^2 - x + 2} \rightarrow \sqrt{-(x^2 + x - 2)} \end{array}$$

$$D_f = [-1, 1) - \{-1\}$$

$$y = \sqrt{(x-r)(x-r)} = \sqrt{(x-r)([x]-r)}$$

$r \leq x < r+1$

$$\begin{array}{c} r \\ + \phi \quad 0 \quad 1 + \end{array}$$

$$D_f = \mathbb{R} \checkmark$$

(r) 6

$$y = \sqrt{|x-1| [x-r]} = \sqrt{|x-1| ([x]-r)}$$

$r \leq x < r+1$

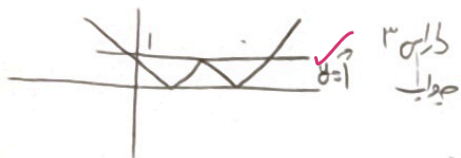
$$\begin{array}{c} * \\ - \phi \quad - \phi \quad 0 \quad 1 + \end{array}$$

$$D_f = [r, +\infty) \cup \{1\}$$

$$y = \frac{1}{||x-r|-1|-k}$$

$$||x-r|-1| \neq k \Rightarrow |x-r|-1 \neq +k \Rightarrow |x-r| = k+1$$

$$|x-r|-1 \neq -k \Rightarrow |x-r| = -k+1$$



$$x = k+r, x = -k+r$$

$$x = -k+r, x = k+r$$

$$x = 0, r, \text{ and } k \checkmark$$

$$K=1 \text{ (مورد خاص)}$$

$$\begin{cases} 0 < K < 1 \\ K=1 \\ K > 1 \end{cases}$$

(r) 7

$$f(n) = \frac{x^r + km + r}{x^r + km + r} = \frac{(n+1)(n+r)}{(n+1)(n+r)} = \frac{(n+1)(n+r)(n-1)}{(n+1)^2(n+r)}$$

$$\log \frac{1}{n+1} \rightarrow -1 > -r > 1 \rightarrow n \neq 1 \rightarrow x^r - 4x + 9 = 0 \quad (x-r)^2 = 0 \rightarrow x=r$$

$$\log \log \frac{1}{n+1} \Rightarrow \begin{cases} x > 0 \\ x \neq 1 \\ x > -1 \end{cases} \rightarrow x > 0 \rightarrow (0, \checkmark) = D_f$$

$$x+1 \neq 1 \rightarrow x \neq 0$$

(r) 9

$$D_{f(n)} = [-2, r]$$

$$D_{f(r, r, 1)} = ?$$

$$-2 \leq \frac{1}{n^r} \leq r \xrightarrow{+1} -2 \leq \frac{1}{n^r} \leq r+1 \rightarrow -\frac{2}{r} \leq n^r \leq \frac{r+1}{r}$$

$$\Rightarrow -\frac{2}{r} \leq n^r \leq \frac{r+1}{r} \rightarrow -\frac{2}{r} \leq n \leq \frac{r+1}{r}$$

(r) 10