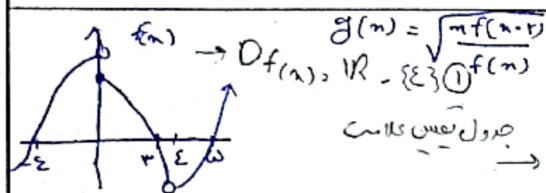
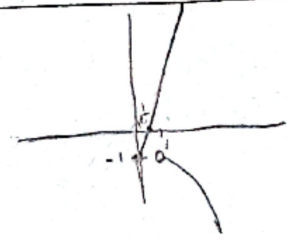
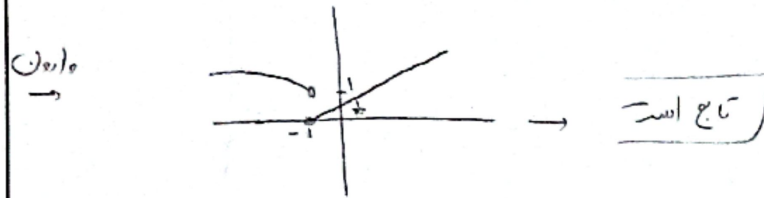
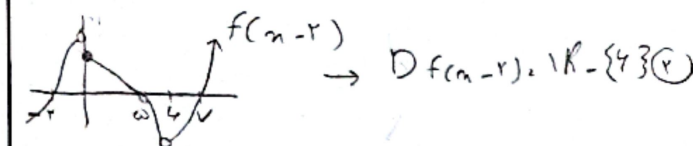


$$x = \begin{cases} xy - 1 & y \geq 0 \\ -y^2 & y < 0 \end{cases} \quad \text{شکل} \quad y = \begin{cases} x^2 - 1 & x \geq 0 \\ -x^2 & x < 0 \end{cases}$$



$$\begin{array}{ccccccc} -2 & -1 & 0 & 1 & 2 & 3 & 4 \\ -\frac{1}{2} & + & 0 & - & \frac{1}{2} & - & \frac{1}{2} & + \end{array} \quad (3)$$



$$Dg = [-2, 2] \cup [2, 4] \cup [4, +\infty)$$

الف) $f(x) = \frac{x^2 - 4x + 2}{x^2 - 2x}$

$$x^2 - 2x \neq 0 \rightarrow x(x-2) \neq 0$$

$$D_f = \mathbb{R} - \{0, 2, -2\}$$

الف) Df

ب) $\sqrt{\frac{x^2 - 4x + 2}{x^2 - 2x}} \rightarrow \Delta < 0$ و $\sqrt{f(x)}$ مثبت
 $x^2 - 2x \rightarrow x(x-2) \rightarrow x < 0$ و $x > 2$
 $\begin{array}{ccc} -2 & 0 & 2 \\ -\frac{1}{2} & + & -\frac{1}{2} & + \end{array}$
 $D_f = (-2, 0) \cup (2, +\infty)$

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

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

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

د) $y = \frac{x^2 + 1}{x^2 - 2x}$ صورت و مخرج همیشه مثبت

$x^2 - 2x \neq 0 \rightarrow x \neq 0$
 $x^2 - 2x \neq 0 \rightarrow x < -2$ و $x > 2$

$$D_f = \mathbb{R} - (-2, 2)$$

ه) $f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}}$

$x(x^2-1) \geq 0 \rightarrow x(x-1)(x+1) \geq 0 \rightarrow \begin{array}{ccc} -1 & 0 & 1 \\ - & + & - & + \end{array}$
 ① $[-1, 0] \cup [1, +\infty)$

$|x|+x > 0 \rightarrow \begin{array}{ccc} x & 0 & 1 \\ - & + & - & + \end{array}$
 ② $x > 0$
 ③ $x < 0$

①, ② $D_f = [1, +\infty)$

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

$|x-1|-x^2 \geq 0 \rightarrow |x-1| \geq x^2$
 ④ $x-1 \geq x^2 \rightarrow x^2 - x + 1 \leq 0$ و $\Delta < 0$
 ⑤ $x-1 \leq -x^2 \rightarrow x^2 + x - 1 \leq 0 \rightarrow (x+2)(x-1) \leq 0$
 $\begin{array}{ccc} -2 & 0 & 1 \\ + & - & + \end{array} \rightarrow [-2, 1]$

$|x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1$ ⑥

④, ⑤ $D_f = [-2, -1) \cup (-1, 1)$

الف) $y = \sqrt{(n-r)[n-r]}$
 $n-r \geq 0 \rightarrow n=r \rightarrow [n] \cdot r = 0 \rightarrow [n] = r \rightarrow r \leq n < r$

$\frac{r}{+} \frac{r}{0} \frac{r}{+} \rightarrow D_f = \mathbb{R}$

ب) $y = \sqrt{|n-1| [n-r]}$
 $|n-1| \neq 0 \rightarrow n \neq 1 \rightarrow [n] \cdot r = 0 \rightarrow [n] = r \rightarrow r \leq n < r$

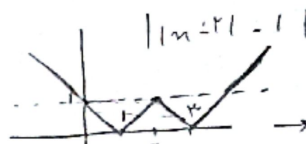
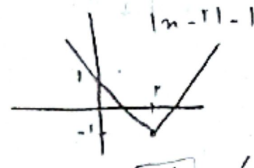
$\frac{1}{-} \frac{r}{-} \frac{r}{0} \frac{r}{+} \rightarrow$

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

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$\frac{1}{|n-r|-1} \rightarrow |n-r|-1 \neq K$

$|n-r|-1$



معنى $y=K$ على شكل نقطتين أو نقطة واحدة أو لا شيء

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

$F(n) = \frac{n+1}{n-1}$

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

$D_f = \mathbb{R} - \{-1, -2, 1\}$

1

$n^2 - 4n + 9 \geq 0 \rightarrow (n-2)^2 \geq -5 \rightarrow n \geq 2$

$y = \log_{n+1} \log_{\frac{1}{r}}$

$D_f?$

$n+1 > 0 \rightarrow n > -1$ (4)

$n+1 \neq 1 \rightarrow n \neq 0$ (5)

$D_f = (0, 1)$

$\log_{\frac{1}{r}} > 0 \rightarrow \frac{1}{r} < 1 \rightarrow 0 < r < 1$ (6)
 $\frac{1}{r} > 1 \rightarrow r < 1$ (7)

9

$D_f(n) = [-\omega, r]$

$D_f(rn^2-1) \Rightarrow -\omega \leq rn^2-1 \leq r$

$rn^2 \leq r \rightarrow n^2 \leq \frac{r}{r} \rightarrow -\sqrt{\frac{r}{r}} \leq n \leq \sqrt{\frac{r}{r}}$
 $rn^2 \geq -r \rightarrow$

$D_f(rn^2-1) = \left[-\frac{\sqrt{r}}{r}, \frac{\sqrt{r}}{r}\right]$

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