

جوازهم B

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① $D_f = [-\varepsilon, 2]$

$-\varepsilon \leq 3n-2 \leq 2 \rightarrow -1 \leq 3n \leq 4 \rightarrow -\frac{1}{3} \leq n \leq \frac{4}{3} \rightarrow D = \left[-\frac{1}{3}, \frac{4}{3}\right]$

$D = [-\varepsilon, 2]$

$-\varepsilon \leq n \leq 2 \rightarrow -1 \leq 3n \leq 6 \rightarrow -1 \leq 3n-2 \leq 4-1 \rightarrow D_f = [-1, 3]$

② $y = x + \sqrt{x-2}$ $\xrightarrow{\text{واحد به واحد}} x-2 + \sqrt{x-2}$

$\sqrt{x-2} = t \rightarrow x-2 = t^2 \rightarrow x-2 = t^2+2$

$y = t^2+2+t = \left(t+\frac{1}{t}\right)^2 + \frac{y}{2} \rightarrow y - \frac{y}{2} = \left(t+\frac{1}{t}\right)^2 \rightarrow t+\frac{1}{t} = \sqrt{y-\frac{y}{2}}$

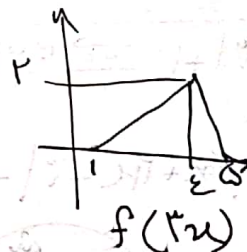
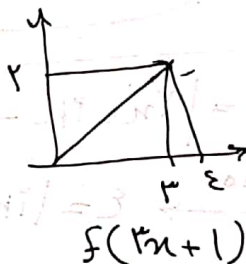
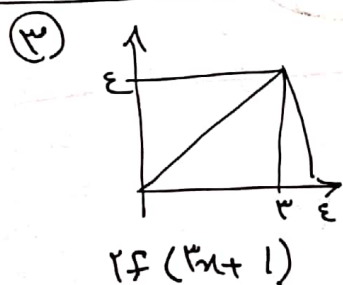
$t = \sqrt{y-\frac{y}{2}} - \frac{1}{t} \rightarrow \sqrt{x-2} = \sqrt{y-\frac{y}{2}} - \frac{1}{t}$

$x-2 = y - \frac{y}{2} + \frac{1}{t} - \sqrt{y-\frac{y}{2}} \rightarrow x = y - \sqrt{y-\frac{y}{2}} + \frac{1}{\frac{1}{2}}$

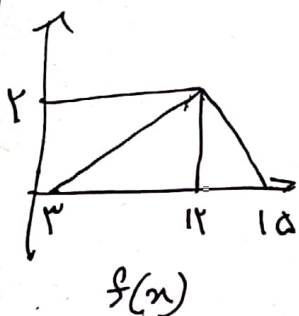
$\rightarrow f^{-1}(x) = x - \sqrt{x-\frac{y}{2}} + \frac{1}{\frac{1}{2}} \Rightarrow x - \sqrt{x-\frac{y}{2}} + \frac{1}{\frac{1}{2}} = x$

$\frac{1}{\frac{1}{2}} = \sqrt{x-\frac{y}{2}} \rightarrow x-\frac{y}{2} = \frac{1}{\frac{1}{4}} \rightarrow x = \frac{1+4}{4} = \frac{5}{4} = 1$

$\begin{vmatrix} 1 \\ 1 \end{vmatrix} \quad \boxed{y=1}$



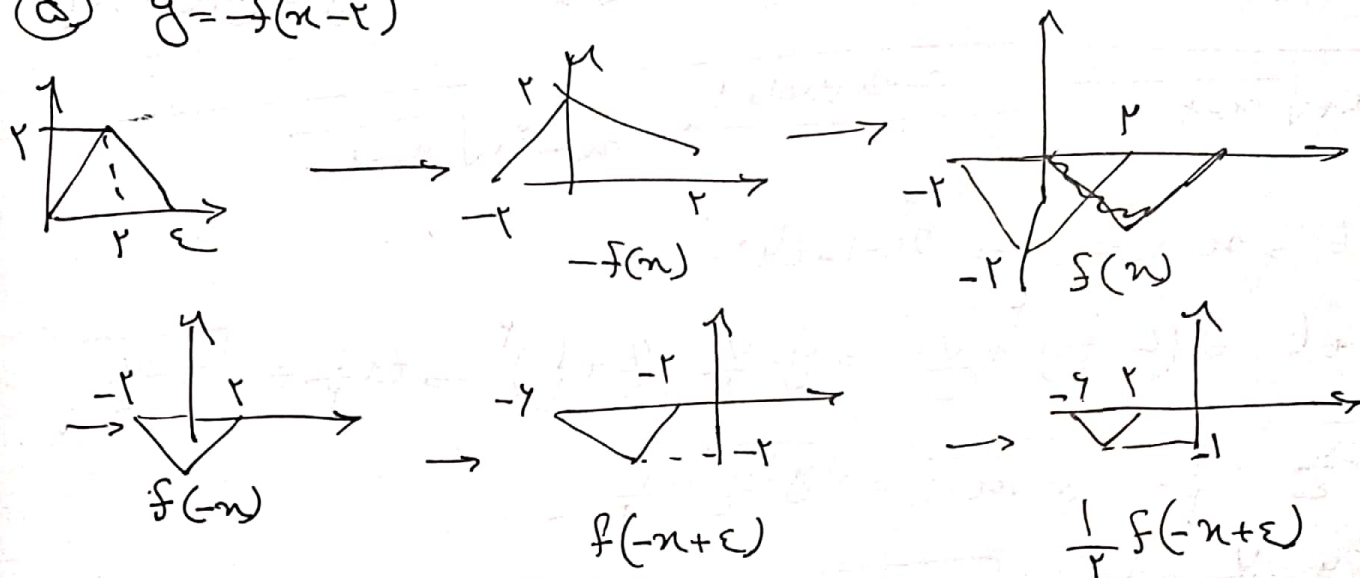
$S = \frac{1 \times 2}{2} = 1$



③ $A(x, y) \rightarrow S(x) = -x$

$x' = x + a \rightarrow x' = \varepsilon + a \rightarrow y' = f(x) - 1 \rightarrow f(\varepsilon + a) - 1 = -\varepsilon + a$
 $y' = y + a \rightarrow y' = -\varepsilon + a \rightarrow \boxed{a = -\varepsilon}$

④ $y = -f(x - \varepsilon)$

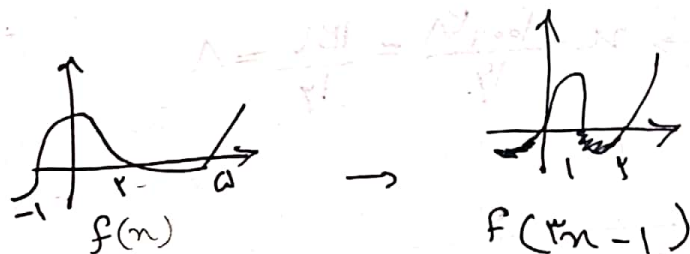


⑤ $y = \sqrt{-(x + \varepsilon)f(x - 1)}$

$-(x + \varepsilon)f(x - 1) \geq 0 \rightarrow (x + \varepsilon)f(x - 1) \leq 0$

$\begin{cases} x + \varepsilon \leq 0 & f(x - 1) \geq 0 \\ x \leq -\varepsilon \end{cases}$

$\begin{cases} x + \varepsilon \geq 0 & f(x - 1) \leq 0 \\ x \geq -\varepsilon \end{cases}$



$\boxed{[-\varepsilon, 0] \cup [1, \varepsilon]}$

⑥ $y = |x - 3| + 1 \xrightarrow{\text{sub } x=0} y = |x + 3 - 3| + 1$

$\xrightarrow{\text{sub } x=3} |x + 3 - 3| - 2 \xrightarrow{x=0} \varepsilon = |3 - 3| - 2$

$\rightarrow 3 - 3 = -2 \rightarrow \boxed{3 = \frac{1}{2}}$

$\rightarrow 3 - 3 = -4 \rightarrow 3 = \frac{1}{4}$

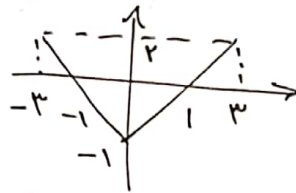
$f(x) = \frac{x-1}{x+1} \xrightarrow{\text{طول 3 برابر}} \frac{-x+1}{x+1} = \frac{-x}{x} + 1 = \frac{-x+3}{x+1}$
 $\xrightarrow{\text{ک و واحد 3 به}} \frac{-x+3}{x+1} + k = \frac{x-1}{x+1} \rightarrow k = \frac{(x-1)(x+3) + (x-3)(x+1)}{(x+1)(x+3)}$

$\rightarrow 2x^2 + 2x - 6 = kx^2 + 2kx + 3k \rightarrow (2-k)x^2 + (2-2k)x - 6-3k = 0$

$\Delta = 0 \rightarrow (2-2k)^2 - 4(2-k)(-6-3k) = 0 \rightarrow 4k^2 - 12k + 11 = 0$

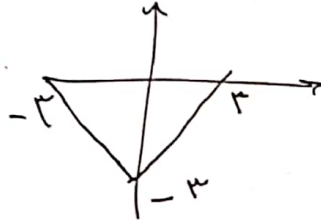
ریشه نذر سه ک یاضه فنی شود

$\textcircled{A} \quad y = -f\left(\frac{x}{3}\right) + 2$



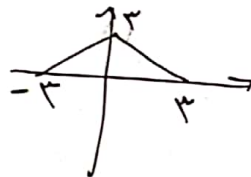
2 واحد به

$\xrightarrow{\text{بسی}} y = -f\left(\frac{x}{3}\right)$



مقیاس

$\xrightarrow{\text{مقیاس}} y = f\left(\frac{x}{3}\right)$



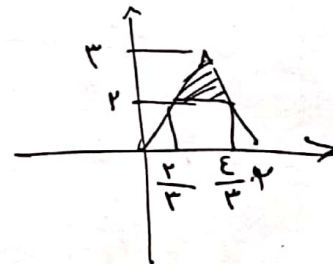
طول 1/3 برابر

$\xrightarrow{\text{طول 1/3 برابر}} y = f(x)$



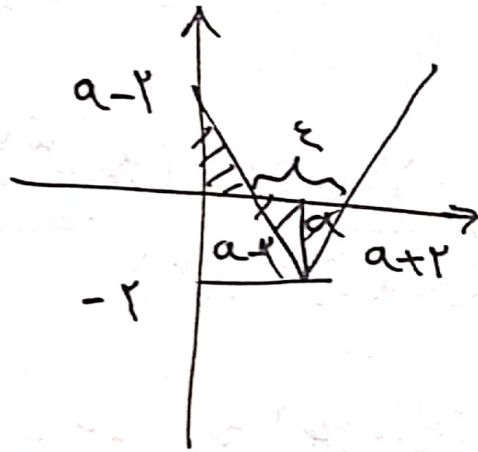
1 واحد به

$\xrightarrow{\text{1 واحد به}} y = f(x-1)$



$S = \frac{\left(\frac{2}{3} - \frac{1}{3}\right) \times 1}{2} = \left(\frac{1}{3}\right)$

(10)



$$S_1 = \frac{(a-r)^r}{r}, \quad S_2 = \frac{(\epsilon \times r)}{r} = \epsilon$$

$$\epsilon + S_1 = \frac{a}{r} \rightarrow S_1 = \frac{1}{r}$$

$$(a-r)^r = 1 \rightarrow a-r = \pm 1 \quad \begin{matrix} \text{است غیر قابل قبول} \\ \text{دلیل} \end{matrix} \rightarrow a-r=1 \rightarrow a=r$$

$$f\left(\frac{1}{a}\right) = f\left(\frac{1}{r}\right) = \left|\frac{1}{r} - r\right| - r = \frac{1}{r} - \frac{r}{r} = \frac{1}{r}$$