

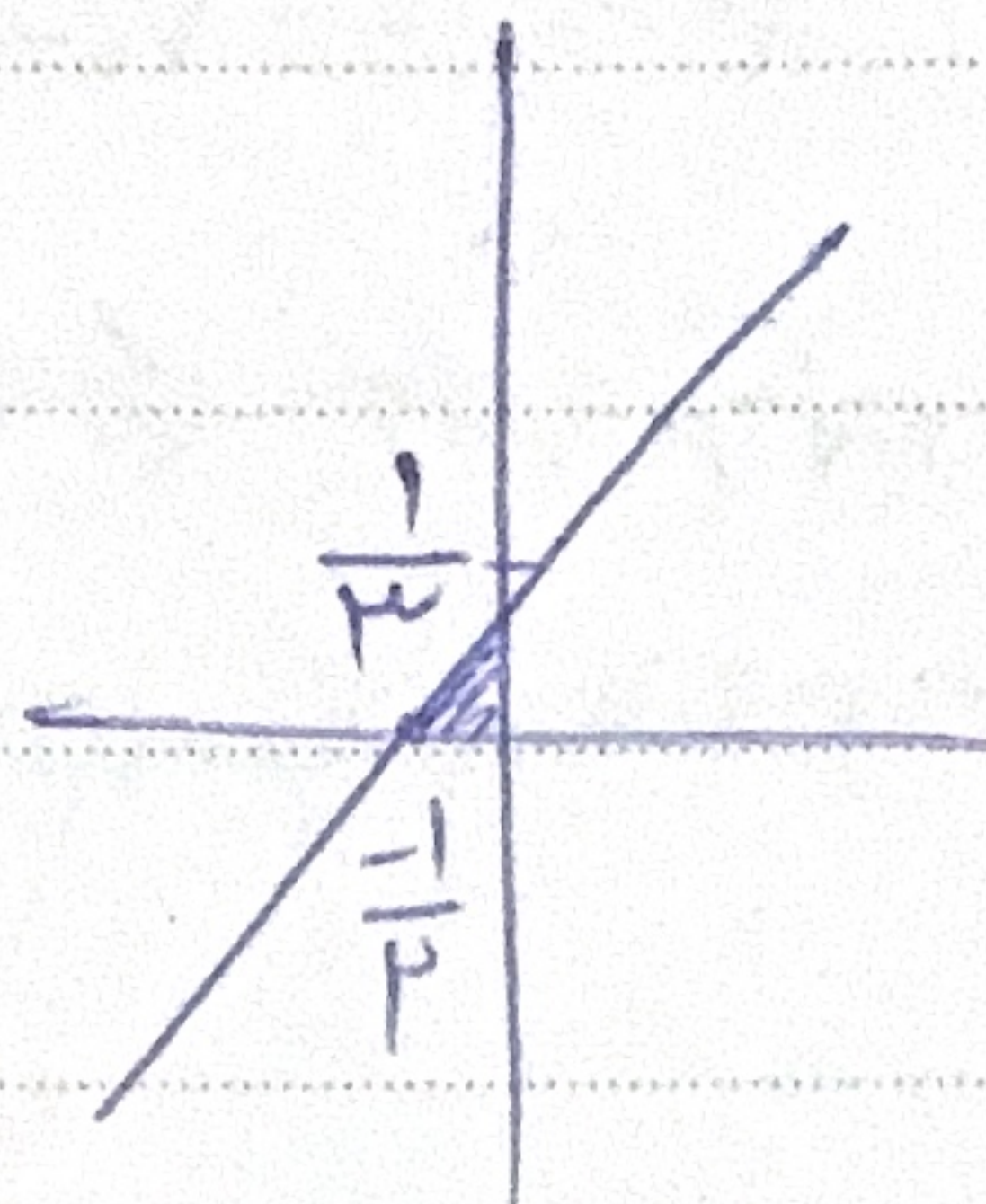
18, 20

سنا امیر قاضی

$ky = kx - 1 \rightarrow kx = ky - 1 \rightarrow \frac{kx+1}{k} = y$ وارن y وال 1

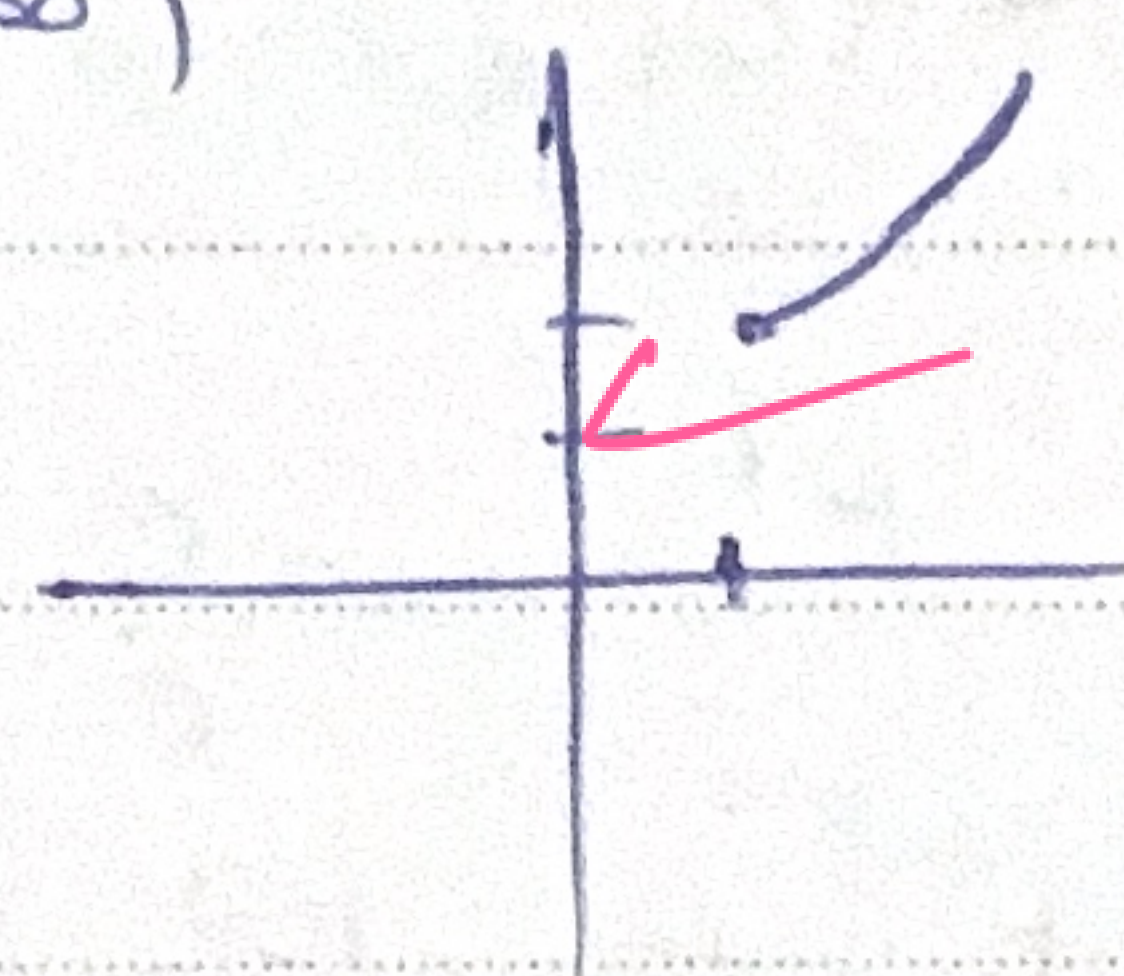
$$f^{-1}(x) = \frac{1}{k}x + \frac{1}{k}$$

$$S = \frac{1}{k} \times \frac{1}{k} \times \frac{1}{k} = \frac{1}{k^3}$$



2

ف) $y = x^2 - 2x + 2$ $Df = [2, \infty)$



نیچر است

وال 2

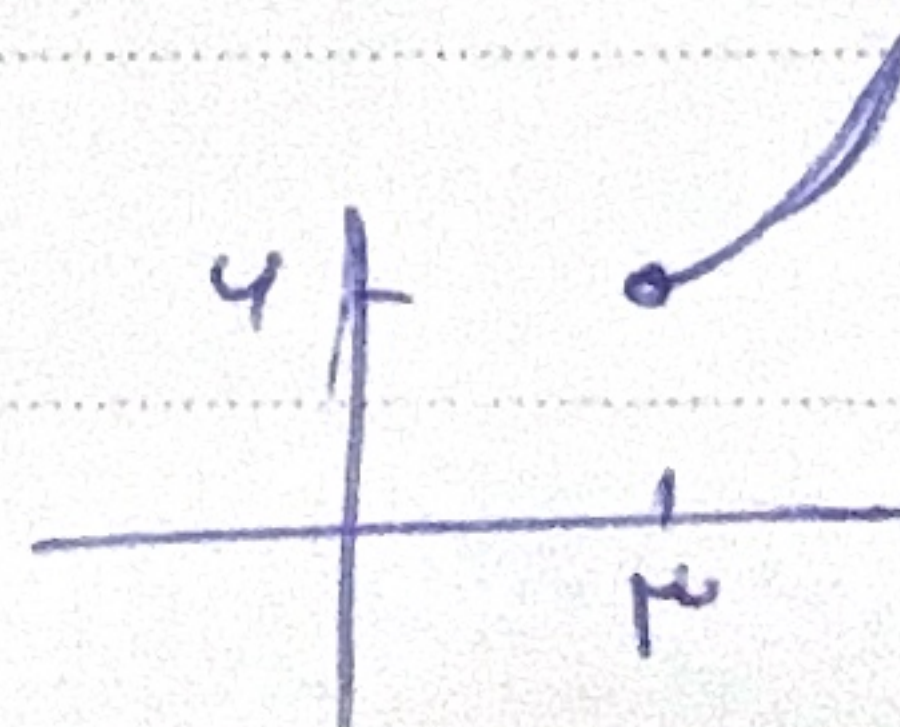
$$y = (x-1)^2 + 1$$

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

$$\sqrt{y-1} = |x-1| \xrightarrow{Df = [1, \infty)} x-1 = \sqrt{y-1} \rightarrow f^{-1}(x) = 1 + \sqrt{x-1}$$

$$R_{f^{-1}} = Df^{-1} = [2, \infty)$$

ی) $y = x^2 - 2x + 2$ $Dg = [2, \infty)$



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

$$Dg = [2, \infty) \rightarrow \sqrt{y-1} = x-1^2 \rightarrow g^{-1}(x) = 1 + \sqrt{x-1}$$

$R_{g^{-1}}$

$$Dg^{-1} = [4, \infty)$$

Date:

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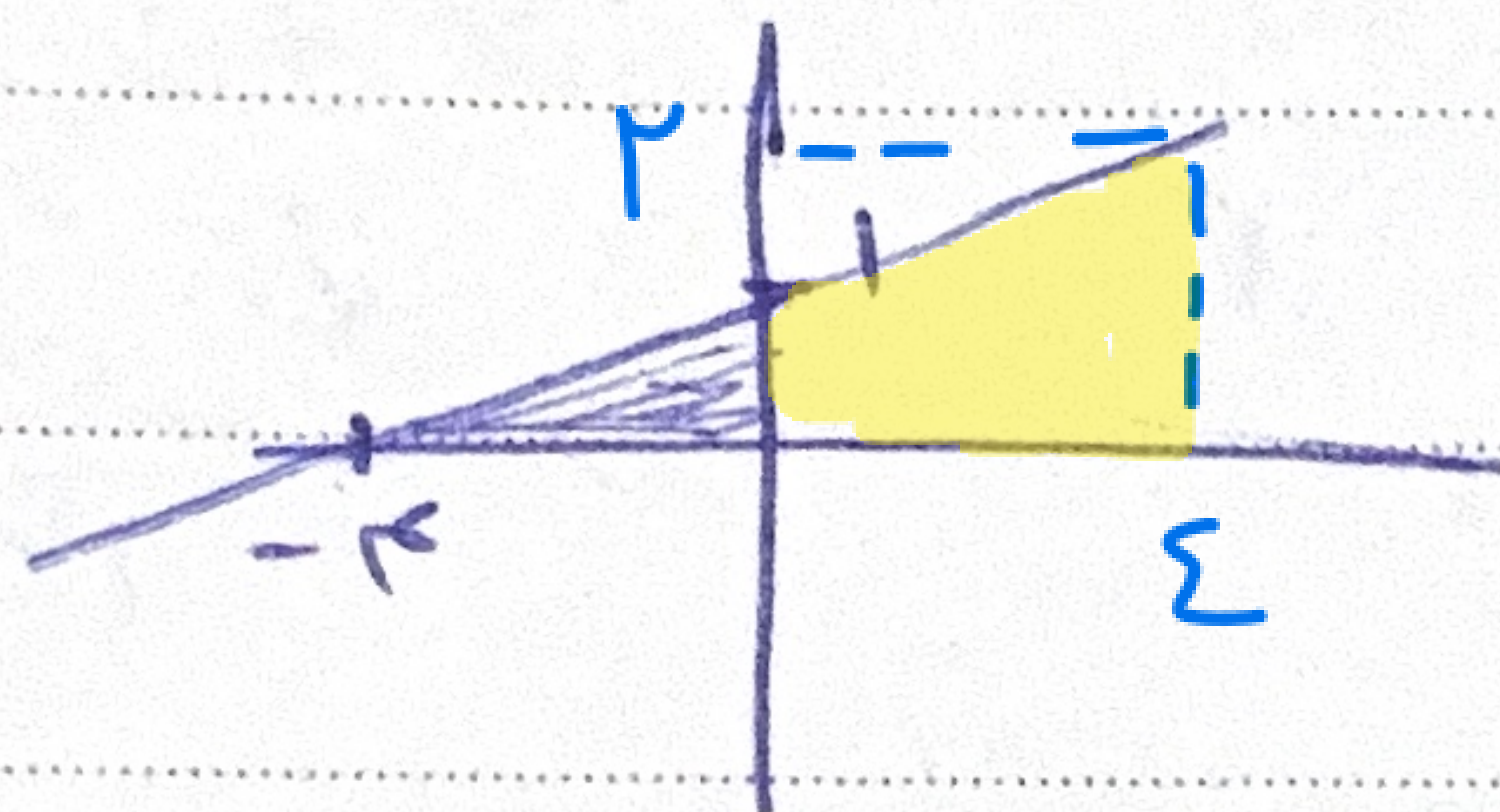
$$f(x) = 2x - \sqrt{14 - \epsilon x (\epsilon - x)} = 2x - \sqrt{(2x - \epsilon)^2}$$

سوال ۳

$$= 2x - |2x - \epsilon| \xrightarrow{x \geq 1} +\epsilon \quad \text{داریم پذیر نیست}$$

در این بازه داریم پذیر است $\epsilon x - \epsilon \xrightarrow{x \leq 1}$

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



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

مساحت با مثبت $\oplus$ مصدر x ها، مضاعف $\leftarrow \frac{(1+2)}{2} = 1.5$ $\rightarrow S_2$

$$y = \frac{x}{\sqrt{x^2 - a}} \Rightarrow y_1 = y_2 \rightarrow \frac{x_1}{\sqrt{x_1^2 - a}} = \frac{x_2}{\sqrt{x_2^2 - a}}$$

داده

$$\rightarrow \frac{x_1^2}{x_1^2 - a} = \frac{x_2^2}{x_2^2 - a} \rightarrow x_1^2 x_2^2 - a x_1^2 = x_2^2 x_1^2 - a x_2^2$$

$$\rightarrow x_1 = \pm x_2 \quad x_2 = x_1 \text{ هم علت این برای این}$$

دست به دست است

$$y = \frac{x}{\sqrt{x^2 - a}} \xrightarrow{\text{مربع}} y^2 = \frac{x^2}{x^2 - a} \rightarrow y^2 x^2 - a y^2 = x^2$$

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

$$x = \sqrt{\frac{a y^2}{y^2 - 1}}$$

که حالتش غریب است، $x=0$ هم علت این

$$\hookrightarrow f^{-1}(x) = \sqrt{\frac{a x^2}{x^2 - 1}}$$

$$Df^{-1} = (-\infty, -1) \cup (1, \infty)$$

$$g(x) = \begin{cases} x^2 - Kx + 1 & x \geq 1 \\ -x^2 + 2x + CK & x < 1 \end{cases}$$

$x=1 \rightarrow y = K-1+K = K-1$ سوال ۵
 $x=1 \rightarrow y = -K+1+CK = 1+CK$
 $1+CK < K-1 \rightarrow CK < K-2 \rightarrow K > 2$

$$f(x) = \begin{cases} Kx & x \geq 1 \\ 2x & x < 1 \end{cases}$$

$y = Kx \rightarrow f^{-1}(y) = \frac{y}{K}$ سوال ۶
 $y = 2x \rightarrow f^{-1}(y) = \frac{y}{2}$ ۱/۵

$$\frac{2}{3} \left(\frac{1}{\gamma} + \frac{1}{\varepsilon} \right) \frac{1}{\gamma} = \frac{\gamma}{\lambda} \quad \left| \frac{1}{\varepsilon} - \frac{\gamma}{\lambda} \right| = \frac{1}{\lambda} \rightarrow \frac{1}{\lambda} x + \frac{\gamma}{\lambda} |x| = f^{-1}(x)$$

$ab = \frac{\gamma}{4\varepsilon}$ $a = \left(\frac{1}{\gamma} + \frac{1}{\varepsilon} \right) \times \frac{1}{\gamma} = \frac{\gamma}{\lambda}$ $b = \left(\frac{1}{\varepsilon} - \frac{1}{\gamma} \right) \times \frac{1}{\gamma} = -\frac{1}{\lambda}$

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$$f(m) = \frac{3x + \epsilon}{x + m} \xrightarrow{(r-1)} \frac{4 + \epsilon}{r + m} = -\frac{1}{r} \rightarrow -r - m = 1 \rightarrow m = -r$$

$$y = \cancel{f^{-1}(m)} + f^{-1}(m) \rightarrow y = \cancel{x} + \frac{3x + \epsilon}{x - r} = \cancel{x} \rightarrow \frac{3x + \epsilon}{x - r}$$

$$f(m) = \frac{3x + \epsilon}{x - r} \rightarrow f^{-1}(m) = -\frac{-3x - r}{x - r} = \frac{3x + \epsilon}{x - r} \quad \begin{matrix} 3x + \epsilon = 0 \\ \downarrow \\ x = -\frac{\epsilon}{3} \end{matrix}$$

$$f(r - rt) = r - g\left(\frac{r}{r}\right) \quad g^{-1}(r) + f^{-1}(-r) = ?$$

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$$g^{-1}(r) = t \rightarrow g(t) = r \rightarrow \frac{r}{r} = t \rightarrow x = rt$$

$$f(r - \epsilon t) = r - g\left(\frac{rt}{r}\right) \rightarrow f(r - \epsilon t) = -r \rightarrow f^{-1}(-r) = r - \epsilon t$$

$$rt + r - \epsilon t = r$$

$$y = \frac{\omega x - 1r}{1 - x} \xrightarrow{\text{بالتعويض}} y = \frac{-\omega x - 1r}{x + 1} \Rightarrow y = \frac{\omega x + 1r}{x + 1}$$

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$$\xrightarrow{\text{بالتعويض}} \frac{\omega(x - r) + 1r}{(x - r) + 1} = \frac{\omega x + r}{x - 1} \xrightarrow{\text{بالتعويض}} \frac{\omega x + 1r}{x - 1}$$

$$= \frac{\omega x + r - rx + r}{x - 1} = \frac{rx + 4}{x - 1} = f(m) \rightarrow f^{-1}(m) = -\frac{(-\frac{x}{2} - 4)}{x - 1} = \frac{x + 4}{x - 1}$$

$$\frac{x + 4}{x - 1} = \frac{rx + 4}{x - 1} \rightarrow x^2 + \omega x - 4 = rx^2 - \epsilon x + 7x - 15$$

$$\rightarrow x^2 - rx - 4 = 0 \quad \text{بجمع الحدود} \rightarrow + 15$$

$$y = x + r[x] \xrightarrow{\text{بالتعويض}} [y] = \omega[x]$$

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$$x = y + r[y] \quad x = y + r[\omega[x]] = y + r[x] = x$$

$$\rightarrow g(x) = x - r[x] \quad (f-g)(m) = x + r[x] - x + r[x] = 2r[x]$$

$$[x] = \frac{[y]}{2} \rightarrow f^{-1}(m) = x - \frac{\epsilon}{2}[x]$$

$$f-g = x + \epsilon[x] - x + \frac{1}{2}[x] = \frac{3}{2}[x]$$

