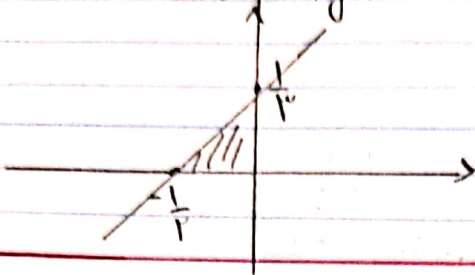


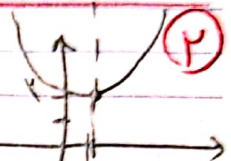
مهرسانجانی / تکلیف شماره 10

$$2y = 3x - 1 \rightarrow 3x = 2y + 1 \rightarrow x = \frac{2y+1}{3} \rightarrow f^{-1} = \frac{2x+1}{3} \rightarrow \begin{vmatrix} 0 & 1 \\ \frac{1}{3} & 0 \end{vmatrix} \quad (1)$$



$$S = \frac{1}{2} \times \frac{1}{3} = \frac{1}{12} \quad (2)$$

الف) $y = 2x^2 - 2x + \frac{3}{2}, x \in [1, +\infty) \rightarrow x = \frac{-b}{2a} = \frac{1}{2} = 1$
 $y = 1 - 2 + \frac{3}{2} = \frac{1}{2}$

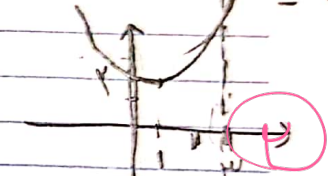


$$y = (x-1)^2 + 2 \rightarrow y-2 = (x-1)^2 \rightarrow \sqrt{y-2} = |x-1| \rightarrow$$

$$x = \sqrt{y-2} + 1 \rightarrow f^{-1} = \sqrt{x-2} + 1; x \in [2, +\infty)$$

دامنه دایره است

ب) $y = 2x^2 - 2x + \frac{3}{2}, x \in [2, +\infty) \rightarrow x = \frac{-b}{2a} = \frac{1}{2} = 1$
 $x = 2 \rightarrow y = 4 - 4 + \frac{3}{2} = \frac{3}{2}$
 $y = 1 - 2 + \frac{3}{2} = \frac{1}{2}$



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

دامنه دایره نیست

$$\sqrt{y-2} = |x-1| \rightarrow x = \sqrt{y-2} + 1 \rightarrow f^{-1} = \sqrt{x-2} + 1; x \in [2, +\infty)$$

$$Rf = [2, +\infty) = D_{f^{-1}}$$

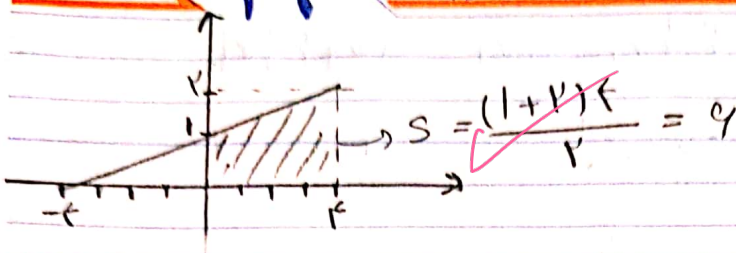
$$f(x) = 2x - \sqrt{4 - 4x(x-1)} = 2x - \sqrt{4x^2 - 4x + 4} = \quad (3)$$

$$2x - |2x - 2|$$

$$\begin{cases} x \geq 1, & y = 2 \rightarrow \text{دامنه دایره نیست} \\ x < 1, & 4x - 2 \end{cases}$$

(4)

$$y = 2x - 2 \rightarrow x = \frac{y+2}{2} \rightarrow f^{-1} = \frac{x+2}{2} \rightarrow \begin{vmatrix} 0 & -2 \\ 1 & 0 \end{vmatrix} \quad (5)$$



$$y = \frac{x}{\sqrt{x^2 - \omega}} \quad y_1 = y_r \rightarrow \frac{x_1}{\sqrt{x_1^2 - \omega}} = \frac{x_r}{\sqrt{x_r^2 - \omega}} \rightarrow$$

تولد y و x
نیت

$$\frac{x_1^2}{x_1^2 - \omega} = \frac{x_r^2}{x_r^2 - \omega} \rightarrow \cancel{x_1^2 x_r^2} - \omega x_1^2 = \cancel{x_1^2 x_r^2} - \omega x_r^2 \rightarrow$$

$$x_1^2 = x_r^2 \rightarrow x_1 = \pm x_r \quad \text{نیت تولد } y \text{ و } x \rightarrow x_1 = x_r \rightarrow \text{نیت تولد } y \text{ و } x$$

$$y = \frac{x}{\sqrt{x^2 - \omega}} \rightarrow x = \frac{-\omega y}{y^2 - 1} = \frac{\omega y}{y^2 - 1} \rightarrow x = \pm \sqrt{\frac{\omega y}{y^2 - 1}}$$

$$f(m) = \sqrt{\frac{\omega x^2}{x^2 - 1}}$$

$$g(x) = \begin{cases} x^2 - x + k & x \geq 1 \rightarrow -\frac{b}{2a} = 1 \\ -x^2 + 4x + 3k & x < 1 \rightarrow \frac{b}{2a} = 2 \end{cases}$$

$$1) x = 1 \rightarrow y = 1 - 1 + k = k - 1$$

$$2) x = 1 \rightarrow -1 + 4 + 3k = 3k + 3$$

$$3k + 3 < k - 1 \rightarrow 2k < -4 \rightarrow k < -2$$

$$f(x) = vx + 1$$

$$f^{-1}(x) = g(x) = ax + b$$

$$\begin{cases} vx & x \geq 0 \rightarrow y = vx \rightarrow x = \frac{y}{v} \\ vx & x < 0 \rightarrow y = vx \rightarrow x = \frac{y}{v} \end{cases}$$

$$f^{-1} = \begin{cases} \frac{x}{v} & x \geq 0 \\ \frac{x}{v} & x < 0 \end{cases} \rightarrow \begin{cases} x(a+b) & x \geq 0 \\ x(a-b) & x < 0 \end{cases}$$

$$\begin{cases} a+b = \frac{1}{v} \\ a-b = \frac{1}{v} \end{cases}$$

$$a \cdot b = \frac{v}{\lambda} \times -\frac{1}{\lambda} = -\frac{v}{\lambda^2}$$

$$va = \frac{v}{\lambda} \rightarrow a = \frac{1}{\lambda}, b = \frac{1}{\lambda}$$

$$f(x) = \frac{vx + f}{x + m}$$

$$\begin{vmatrix} v & f \\ -1 & m \end{vmatrix}$$

$$y = f \circ f^{-1}(x) + f^{-1}(x)$$

$$\begin{vmatrix} x=v \\ y=1 \end{vmatrix} \rightarrow -1 = \frac{v \cdot 1 + f}{1 + m} \rightarrow -1 = \frac{v + f}{1 + m} \rightarrow -1(1 + m) = v + f \rightarrow -1 - m = v + f \rightarrow -m = v + f + 1 \rightarrow m = -v - f - 1$$

$$f(x) = \frac{vx + f}{x - v} \rightarrow x = -\frac{-vy - f}{y - v} = \frac{vy + f}{y - v}$$

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

$$y = x + f^{-1}(x) = x + \frac{vx + f}{x - v}$$

$$\text{نیمه اولی} \rightarrow y = x \Rightarrow x + \frac{vx + f}{x - v} = x \rightarrow \frac{vx + f}{x - v} = 0$$

$$x = \frac{-f}{v}$$

$$f(3-2x) = 1 - g\left(\frac{x}{2}\right) \quad f g^{-1}(x) + f^{-1}(-x)$$

$$\begin{cases} f(3-2x) = -1 \\ g\left(\frac{x}{2}\right) = x \end{cases} \rightarrow -1 = 1 - x \rightarrow \checkmark$$

$$f\left(\frac{x}{2}\right) + 3 - 2x = \cancel{2x} + \cancel{3 - 2x} = 3$$

$$y = \frac{\omega x - 13}{1 - x} \xrightarrow{\text{قرینه}} -x = \frac{-\omega y - 13}{1 + y} \rightarrow x = \frac{\omega y + 13}{1 + y}$$

$$y = -\frac{x - 13}{x - \omega} = \frac{13 - x}{x - \omega} \xrightarrow{\text{عوض می‌کنیم}} y = \frac{13 - (x - 2)}{x - 2 - \omega} = \frac{15 - x}{x - 2 - \omega}$$

$$\xrightarrow{\text{مساوی می‌کنیم}} y = \frac{15 - x}{x - 2 - \omega} - 13 = \frac{-fx + 39}{x - 2 - \omega} = f(x)$$

$$f^{-1}(x) = -\frac{-vx - 39}{x + 2} = \frac{vx + 39}{x + 2}$$

$$\frac{vx + 39}{x + 2} = \frac{39 - fx}{x - 2} \rightarrow vx^2 - fx^2 + 39x - 2\omega x = 39x + 14f - fex^2$$

$$\rightarrow 11x^2 - 33x - 39 = 0 \div 11 \rightarrow x^2 - 3x - 3.5 = 0$$

$$\text{مجموع جملات} = -\frac{b}{a} = \frac{3}{1} = 3$$

$$-y = \frac{-\omega n - 13}{n + 1} \rightarrow y = \frac{\omega n + 13}{n + 1} \rightarrow \frac{\omega(n - 2) + 13}{n - 2 + 1} - 13 = \frac{1n + 4}{n - 1}$$

$$f^{-1}(n) = \frac{n + 4}{n - 1} \rightarrow f(n) = f^{-1}(n) = n^2 - 4n - 4 \rightarrow S = -\frac{b}{a} = 4$$

$$f(x) = x + f[x]$$

$$f(x) - g(x) = ?$$

(۱۰)

$$\rightarrow y = x + f[x] \quad [] \quad [y] = [x + f[x]] = [x] + f[x] \quad \text{قرینه}$$

$$[x] = \omega[y] \rightarrow [y] = \frac{[x]}{\omega} \rightarrow x - \frac{f[x]}{\omega} = y = g(x) \quad \text{قرینه}$$

$$x = y + f[y]$$

$$f(x) - g(x) = x + f[x] - x + \frac{f[x]}{\omega} = \frac{f[x]}{\omega}$$