

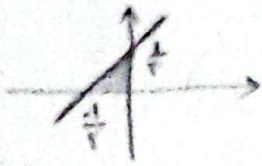
الف)  $y = \frac{2}{x} - \frac{1}{x} \Rightarrow f(x) = \frac{2}{x} - \frac{1}{x} \Rightarrow y = \frac{2}{x} - \frac{1}{x}$

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①



$$y = \frac{2}{x} - \frac{1}{x} \Rightarrow f(x) = \frac{2}{x} - \frac{1}{x} \Rightarrow y = \frac{2}{x} - \frac{1}{x}$$

$$x = \frac{2}{y} - \frac{1}{y} \Rightarrow y = \frac{2}{x} - \frac{1}{x}$$

$$S_0 = \frac{1}{x} + \frac{1}{x} = \frac{2}{x}$$

$$y = x^2 - 2x + 2, x \in [1, +\infty) \Rightarrow y = (x-1)^2 + 1 \Rightarrow f(x) = (y-1)^2 + 1 \Rightarrow$$

②

$$f(x) = \sqrt{x-1} + 1, Df = [2, +\infty) \text{ (بردار } f \text{ از } [2, +\infty) \text{ به } [1, +\infty) \text{ است)}$$

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

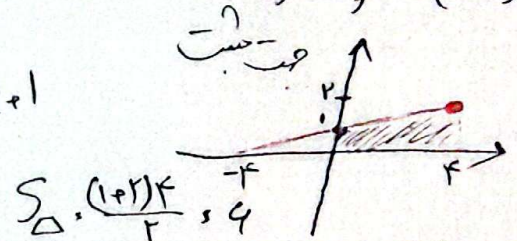
$$Rf = (3-1)^2 + 1 = 4 \Rightarrow Df^{-1} = [4, +\infty)$$

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

③

$$f(x) = 2x - |2x-1| \Rightarrow \frac{2x-1(2x-1)}{2x-1} \Rightarrow x \in (-\infty, 1/2) \text{ و } Rf = Df^{-1} = (-\infty, 1/2]$$

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



$$y \sqrt{n^2 - \omega} > \omega \Rightarrow y^2(n^2 - \omega) > \omega^2 \Rightarrow y^2 n^2 - \omega y^2 > \omega^2 \Rightarrow y^2 n^2 > \omega^2 + \omega y^2 \Rightarrow n^2 > \frac{\omega^2 + \omega y^2}{y^2 - 1}$$

④

$$\Rightarrow \omega = \pm \sqrt{\frac{\omega y^2}{y^2 - 1}} \Rightarrow y = \pm \sqrt{\frac{\omega y^2}{n^2 - 1}} \Rightarrow \text{① } y > \sqrt{\omega} \Rightarrow y > 0 \text{ و } \text{② } y < -\sqrt{\omega} \Rightarrow y < 0$$

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

میشود پس می توانیم ی و ده هم علامت بزنیم

$$g(x) = \begin{cases} x^2 - 4x + 4 & ; x \geq 2 \\ -x^2 + 4x + 4 & ; x < 2 \end{cases}$$

$$\Rightarrow x = 2 \Rightarrow 4 - 4 + 4 = 4 \text{ و } -4 + 4 + 4 = 4 \Rightarrow 4K = -12 \Rightarrow K = -3$$

⑤

ما کسیم K و -6 بوده در نتیجه  $K \in (-\infty, -6]$

$$f(x) = r|x+1|, f^{-1}(x) = g(x) = a|x+b|$$

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$$f(x) = r|x+1| \Rightarrow \frac{0}{r|x+1|} \Rightarrow f^{-1}(x) = \frac{0}{\frac{1}{r}|x|} \Rightarrow f^{-1}(x) = a|x+b|$$

$$\frac{0}{(a-b)x | (a+b)x} \Rightarrow \left. \begin{matrix} a-b = \frac{1}{r} \\ a+b = \frac{1}{r} \end{matrix} \right\} \Rightarrow r a = \frac{1}{r} \Rightarrow a = \frac{1}{r^2}, b = \frac{1}{r} \Rightarrow a b = \frac{1}{r^3}$$

$$f(x) = \frac{rx+f}{x+m} \Rightarrow \frac{r(r)f}{r+m} \Rightarrow -r-1 \cdot m = 1 \Rightarrow m = -r \Rightarrow f(x) = \frac{rx+f}{x-r}$$

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$$a, a \text{ قابل } \Rightarrow f(a), f^{-1}(a) \Rightarrow f(f^{-1}(a)) = a \Rightarrow y = a + \frac{ra+f}{a-r}, y = a \Rightarrow$$

$$\Rightarrow a + \frac{ra+f}{a-r} = a \Rightarrow \frac{ra+f}{a-r} = 0 \Rightarrow ra+f = 0 \Rightarrow a = -\frac{f}{r}$$

$$f(r-r) = r - y\left(\frac{r}{r}\right) \Rightarrow g^{-1}(r) = a \Rightarrow g(a) = r \Rightarrow \frac{a}{r} = a \Rightarrow r a = r \Rightarrow f(r-r) = r - g(r) = \frac{r}{r}$$

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$$\Rightarrow f(r-r) = -r \Rightarrow f^{-1}(-r) = r-r \Rightarrow f^{-1}(r) = r-r \Rightarrow f^{-1}(r) = r-r \Rightarrow f^{-1}(r) = r-r$$

$$y = \frac{\omega x - 13}{1-x} \xrightarrow{\text{قرینه نسبت به } y} y = \frac{\omega x + 13}{x+1} \xrightarrow{\text{دو طرفه } \omega} y = \frac{\omega(x-2) + 13}{(x-2)+1} \xrightarrow{\text{دو طرفه } \omega} y = \frac{\omega(x-2) + 13}{(x-2)+1}$$

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

$$\Rightarrow rx^2 + yx - rx - y = x^2 + yx - x - y \Rightarrow rx^2 - rx = x^2 - x \Rightarrow r = \frac{b}{a} = \alpha + \beta = \frac{3}{2}$$

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

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$$\Rightarrow [y = x + f[x]] \Rightarrow [y] = \omega[x] \Rightarrow [x] = \frac{[y]}{\omega} \left\{ \frac{f}{\omega} [y] = y - x \Rightarrow x = y - \frac{f}{\omega} [y] \right.$$

$$y = x + f[x] \Rightarrow f[x] = y - x \Rightarrow [x] = \frac{y-x}{f}$$

$$\Rightarrow f^{-1}(x) = g(x) = x - \frac{f}{\omega} [x] = (f-g)(x) = x + f[x] - x + \frac{f}{\omega} [x] = \frac{xf}{\omega} [x]$$

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