

دوازدهم در صفر ۳

تکلیف ۱۰

کمپیا امیری بنا

$$y = 3x - 1 \xrightarrow{\text{دارد}} x = \frac{y+1}{3} \rightarrow x+1 = \frac{y}{3} \rightarrow y = \frac{x+1}{3} \quad (1)$$

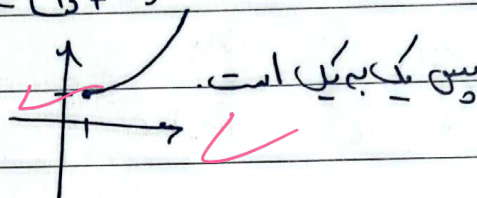
$$x=0 \rightarrow y = \frac{1}{3} \quad \left| \frac{1}{3} \right|$$

$$y=0 \rightarrow \frac{x+1}{3} = 0 \rightarrow x = -1 \quad \left| \frac{-1}{3} \right|$$

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

$$f(x) = x^2 - 2x + 3 \quad x \in [1, +\infty)$$

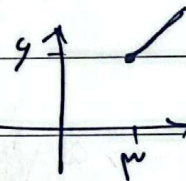
$$-\frac{b}{2a} = \frac{2}{2} = 1$$



$$y = x^2 - 2x + 3 + 1 - 1 \rightarrow y = (x-2)^2 - 1 \xrightarrow{\text{دارد}}$$

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

$$y-2 = +\sqrt{x+1} \rightarrow y = \sqrt{x+1} + 2 \quad D_{f^{-1}} = R_f = [1, +\infty)$$

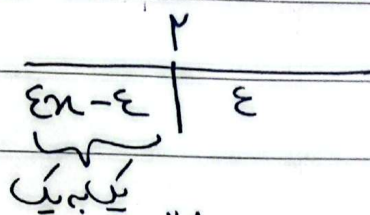


$$g(x) = x^2 - 2x + 3 \quad x \in [1, +\infty)$$

$$y = x^2 - 2x + 3 + 1 - 1 \xrightarrow{\text{دارد}} y = \sqrt{x+1} + 2 \quad D_{f^{-1}} = R_g = [1, +\infty)$$

$$f(x) = \sqrt{14 - 4x(x-1)} = \sqrt{14 - 4x^2 + 4x} \quad (3)$$

$$= \sqrt{14 - 4(x-1)^2} = \sqrt{14 - 4(x-1)^2} \quad D_f = B_f = x \leq 1$$



$$y = \sqrt{14 - 4(x-1)^2} \quad x \leq 1 \quad \text{واری} \rightarrow x = 1 - y$$

$$xy = x + 1 \rightarrow y = \frac{x}{x-1} + 1$$

$$x=0 \rightarrow y=1$$

$$x=1 \rightarrow y=2$$

$$S = \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1 \quad (=y)$$

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

$$(x_1, y) \rightarrow y = \frac{x_1}{\sqrt{x_1^2 - a}} = \frac{x_2}{\sqrt{x_2^2 - a}} \quad \text{واری} \rightarrow \frac{x_1^2}{x_1^2 - a} = \frac{x_2^2}{x_2^2 - a}$$

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

اما چون x_1 و x_2 هر دو مثبت و $x_1 = x_2$ و $x_1 = -x_2$ و $x_1 = x_2$ و $x_1 = -x_2$ است.

$$y = \frac{x}{\sqrt{x^2 - a}} \quad \text{واری} \rightarrow y(\sqrt{x^2 - a}) = x \quad \text{واری} \rightarrow$$

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

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

$$\rightarrow x = \pm \frac{y \sqrt{a}}{\sqrt{y^2 - 1}} \quad \text{واری} \rightarrow x = + \frac{y \sqrt{a}}{\sqrt{y^2 - 1}} \rightarrow f^{-1} = y = \frac{x \sqrt{a}}{\sqrt{x^2 - 1}}$$

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

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$$x=1 \rightarrow \begin{cases} x^2 - \varepsilon x + k = \varepsilon - 1 + k = k - \varepsilon \\ -x^2 + 4x + 3k = -\varepsilon + 1 + 3k = 3k + 1 \end{cases}$$

$$3k + 1 \leq k - \varepsilon \rightarrow 2k \leq -1 - \varepsilon \rightarrow k \leq -\frac{1+\varepsilon}{2}$$

$$f(x) = 3x + |x|$$

1.2.8 (6)

$$\begin{array}{c} 0 \\ \hline 3x \quad | \quad \varepsilon x \end{array} \rightarrow f^{-1}(x) = \begin{cases} \frac{x}{\varepsilon} & x \geq 0 \\ \frac{x}{3} & x < 0 \end{cases}$$

$$R = (-\infty, 0) \quad R = [0, +\infty)$$

$$y = 3x \xrightarrow{a, b} y = \frac{x}{\varepsilon} \quad y = \varepsilon x \xrightarrow{a, b} y = \frac{x}{\varepsilon}$$

$$\begin{aligned} x \geq 0 & \quad (a+b)x = \frac{x}{\varepsilon} \rightarrow (a+b) = \frac{1}{\varepsilon} \\ x < 0 & \quad (a-b)x = \frac{x}{\varepsilon} \rightarrow (a-b) = \frac{1}{\varepsilon} \end{aligned} \rightarrow \begin{cases} a = \frac{3}{\varepsilon} \rightarrow a = \frac{3}{\lambda} \text{ و } b = \frac{1}{\lambda} \\ a = \frac{3}{\varepsilon} \text{ و } b = \frac{1}{\varepsilon} \end{cases}$$

نشیب مثبت از $x < 0$ و $x \geq 0$ حقیقت بی باقی

منفی باشد $b = -\frac{1}{\varepsilon}$

$$ab = \frac{3}{\varepsilon^2}$$

$$ab = -\frac{3}{\varepsilon^2}$$

$$f(n) = \frac{3n+4}{n+m} \quad \frac{(2, -1)}{2+m} \quad \frac{4+4}{2+m} = -1 \quad (v)$$

$$\frac{1}{2+m} = -1 \rightarrow 2+m = -1 \rightarrow m = -3$$

$$f(n) = \frac{3n+4}{n-3}$$

دو دوتا برابر
۰۰ مساوی می کنند
خود تابع $\rightarrow f^{-1} = f$

$$f \circ f^{-1}(n) = n \rightarrow y = n + f(n) = \frac{3n+4}{n-3} + n = n$$

$f^{-1}(n) = f(n)$ بنیم ساز تابع اول دوم

$$\frac{3n+4}{n-3} = 0 \rightarrow n = \frac{-4}{3}$$

$$f(3-2n) = 2 - g\left(\frac{n}{2}\right) \quad \checkmark \quad \varepsilon g^{-1}(\varepsilon) + f^{-1}(-2) = ? \quad (A)$$

$$g^{-1}(\varepsilon) = t \rightarrow g(t) = \varepsilon \rightarrow \frac{n}{2} = t \rightarrow n = 2t$$

$$f(3-2(2t)) = 2 - g(t) = 2 - \varepsilon = -2 \rightarrow f(3-4t) = -2$$

$$\varepsilon g^{-1}(\varepsilon) + f^{-1}(-2) = \cancel{\varepsilon t} + 3 - \cancel{\varepsilon t} = 3$$

$$y = \frac{5x - 13}{1 - x} \xrightarrow{\text{مضرب}} y = - \frac{-5x - 13}{x + 1} = \frac{5x + 13}{x + 1} \quad (9)$$

$$\begin{aligned} &\xrightarrow{\text{۲ واحد ۲}} = \frac{5(n-2) + 13}{(n-2) + 1} \xrightarrow{\text{۳ واحد ۳}} = \frac{5n - 10 + 13}{n - 1} = \frac{5n + 3}{n - 1} \end{aligned}$$

$$\xrightarrow{\text{وادی}} n = \frac{5y + 3}{y - 1} \rightarrow y = \frac{5n + 3}{n - 1}$$

$$f(n) = f^{-1}(n) \rightarrow \frac{5n + 3}{n - 1} = \frac{n + 3}{n - 1} \rightarrow 5n^2 - 5n + 3n - 3 = n^2 + 3n - 3$$

$$\rightarrow 5n^2 - 3n - 3 = 0 \rightarrow \Delta = \frac{b^2}{a} = \frac{9}{1} = 3$$

$$f(n) = n + \varepsilon[n] \quad g(n) = f^{-1}(n) \quad (10)$$

$$y = n + \varepsilon[n] \xrightarrow{\text{مضرب}} [y] = [n + \varepsilon[n]] \rightarrow [y] = [n] + \varepsilon[n]$$

$$\rightarrow [y] = 5[n] \rightarrow [n] = \frac{[y]}{5}$$

$$y = n + \varepsilon \frac{[y]}{5} \rightarrow n = y - \varepsilon \frac{[y]}{5} \xrightarrow{\text{وادی}} y = n - \varepsilon \frac{[n]}{5}$$

$$f - g = n + \varepsilon[n] - n + \varepsilon \frac{[n]}{5} = \frac{4\varepsilon[n]}{5}$$