

امیرین
کلیف
دوازدهمین

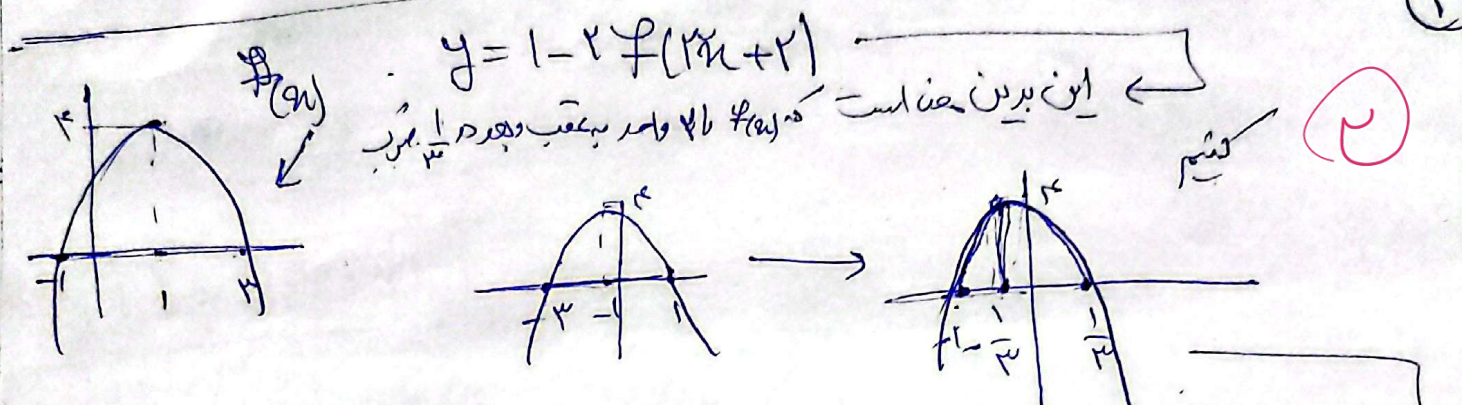
$$y = -\frac{1}{2}x^2 + \frac{1}{2}x + 1$$

$$A = \begin{vmatrix} 3 & 2 \\ 2 & 1 \end{vmatrix} = 3 \cdot 1 - 2 \cdot 2 = -1$$

① ①
 $n=1$
 $x=2 \leq 3$
 $x=3 \leq 4$
 $n < 1$

$\Rightarrow B-A \mid \frac{1}{2} \Rightarrow f(x) = f(x - \frac{1}{2}) + \frac{1}{2} = 0 \Rightarrow \frac{1}{2}x^2 + \frac{1}{2}x + 1 + \frac{1}{2} = 0$

$x = \frac{1}{2} \Rightarrow \frac{1}{2}x^2 - \frac{1}{2}x - 1 = 0 \Rightarrow (x+1)(x-2) = 0 \Rightarrow x = -1, 2$



حل، آن سه با دست می آوریم طول، آن سه $-\frac{1}{2}$

عرض آن برابر می شود با $1 - 1 = 0$ $\Rightarrow \alpha \cdot \beta = \frac{1}{2}$

$y = -1 \Leftarrow$

①

$y = 3 - \sqrt{2x} \Rightarrow y = \sqrt{2(x+1)} \Rightarrow \sqrt{2(x+1)} = 3 - y$

$\Rightarrow y = \sqrt{2(x+1)} + 1 \Rightarrow \sqrt{2(x+1)} = y - 1$

$\Rightarrow \sqrt{2(x+1)} = 1 \Rightarrow 2(x+1) = 1 \Rightarrow x = -\frac{1}{2}$

$2 - 2x = \frac{1}{2} \Rightarrow 4 - 4x = 1 \Rightarrow 4x = 3 \Rightarrow x = \frac{3}{4}$

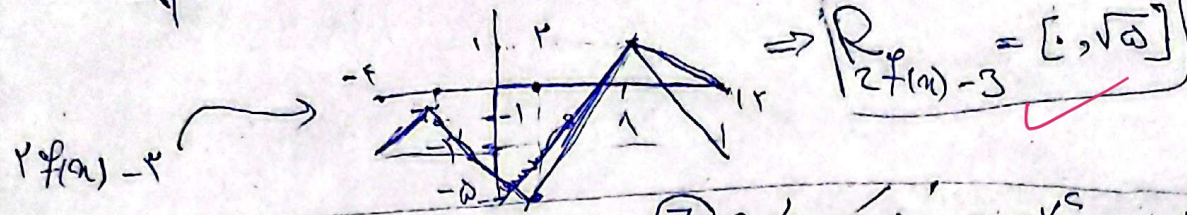
$D_{f(x)} = (a, 4] \Rightarrow D_{f(x-1)} = (a+1, 4]$

$D_{g(x)} = [-1, b) \Rightarrow D_{g(x+1)} = [-2, b+1)$

$\Rightarrow b-1 = a \Rightarrow b = a+1$

$a+1 = -2 \Rightarrow a = -3$

$\Rightarrow a-b = -3 - 4 = -7$


$$\Rightarrow \alpha = \frac{1}{a} \Rightarrow \frac{1}{a^r} [1] \Rightarrow \frac{1}{a^r} = \frac{1}{r} \textcircled{\text{I}} \xrightarrow{\text{I}} \boxed{\alpha = -r}$$

$$\Rightarrow b-a \Rightarrow 1 - (-2) = 3$$

$$\Rightarrow g(r) = -\frac{g_0}{r} - \frac{a+r}{r} + \mu$$

$y = f(x)$

$1 - f(a-1) \Rightarrow f(a-1) - 1$

$$f(x) = \left| \frac{x+1}{x^2+1} \right|$$

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$$g(x) = \left| \frac{x-1}{x^2-1} \right| + 1 \Rightarrow g(x) < 0 \Rightarrow \left| \frac{x-1}{x^2-1} \right| + 1 + x < 0$$

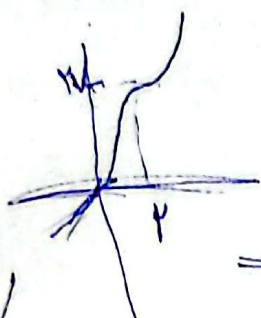
(I) فرض کنیم $x > 0$ و $x \neq 1$

$$\frac{x-1}{x^2-1} + 1 + x = 0 \Rightarrow \frac{x-1 + x^3 - x^2 - x^2 + 1}{x^2-1} = -1 \Rightarrow \frac{x^3 - 2x^2}{x^2-1} = -1 \Rightarrow x^3 - 2x^2 = -x^2 + 1$$

$$\Rightarrow x^3 - x^2 - 1 = 0 \Rightarrow x^2(x-1) < 0 \Rightarrow x < 1$$

$$\Rightarrow \boxed{x = -\sqrt{2}}$$

$$\Rightarrow D_x = (-\infty, -\sqrt{2}]$$



$$g(x) = \sqrt{21f(x) - f^2(x)}$$

$$\Rightarrow 21f(x) - f^2(x) \geq 0 \Rightarrow f(x) \leq 21$$

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$$\begin{aligned} (x-a)^3 + b & \xrightarrow{x=0} -a^3 + b = 0 \Rightarrow b = a^3 \\ & \xrightarrow{x=2} (2-a)^3 + a^3 = 21 \Rightarrow 1 - 3a + 9a^2 - 21 = 0 \end{aligned}$$

$$\Rightarrow 9a^2 - 12a - 20 = 0 \Rightarrow \Delta = 400 \Rightarrow a \geq 0 \Rightarrow a = \frac{4 + 20\sqrt{9}}{9}$$

$$\Rightarrow \left(2 - \frac{4 + 20\sqrt{9}}{9}\right)^3 + \left(\frac{4 + 20\sqrt{9}}{9}\right)^3 = 21 \Rightarrow a = 3 \Rightarrow f(x) > 21$$

پس از آن جواب برای سوال وجود دارد

$$y = K(x-2)^3 + 21 \xrightarrow{(0,0)} K = \frac{21}{8}$$

باید به ضرب x توجه کنید

$$0 \leq f(x) \leq 21 \rightarrow f(x) \rightarrow 0 \rightarrow x \rightarrow 0$$

$$f(x) = 21 \rightarrow x = \frac{1}{3} \rightarrow x \in \left[0, \frac{1}{3}\right]$$