

عملیات

سوال ۱ ← $f(x) = \sqrt{1-x^2}$ $g = \{(-1,1) | (0,1) | (1,0) | (1,-1)\}$

$\rightarrow Df = [-1,1] \rightarrow Dg \cap Df = \{-1,0,1\}$

$\rightarrow f|_D \rightarrow x \in A$ $\rightarrow f|_D \rightarrow x \in A$

$\rightarrow f|_D - f|_D \rightarrow x - 0 = x$
 $\rightarrow x - 1 = 0$
 $\rightarrow x - 0 = 1$ $\rightarrow R_f = \{x, y, z\}$

سوال ۲ ← $f(x) = x-1$ $[-1, \infty)$ $\rightarrow x, y \rightarrow f(y) - 1 = 0$

$\rightarrow R_f = (0, \infty)$

$g(x) = \frac{1}{x} x + 1 (-\infty, 1] \rightarrow (-\infty, 1] = R_g$

$\cup, (R - (1, \infty))$

سوال ۳ ← $g = \frac{-x^2}{2} + x + 1 \rightarrow \frac{y}{2} < \frac{-x^2}{2} + x + 1$

$\rightarrow \frac{x^2}{2} - x - \frac{y}{2} < 0 \rightarrow x^2 - x - \frac{y}{2} < 0$
 $\rightarrow (-1, 1) \rightarrow \sqrt{1 - (-1)} = \sqrt{2} = 1$

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

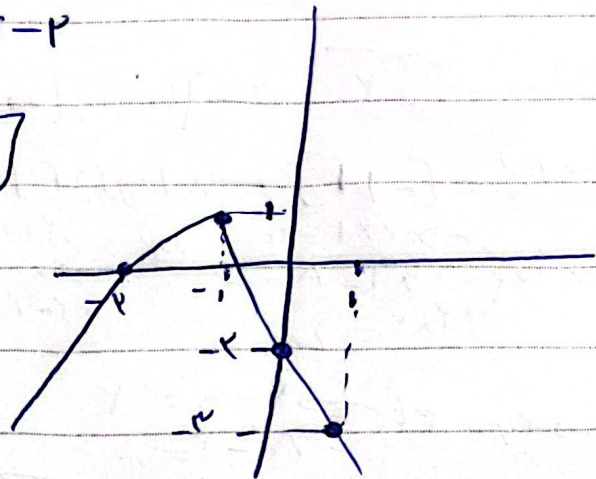
Min = +2

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$$\begin{array}{c|c|c} -1 & 0 & \\ \hline x+2 & \begin{array}{c} -x-4x-1 \\ -2x-2 \end{array} & \begin{array}{c} x-6x-2 \\ \rightarrow -x-2 \end{array} \\ \hline \end{array} \quad \begin{array}{c} [-1] \\ [1] \end{array} \quad \begin{array}{c} [0] \\ [-2] \end{array} \quad \begin{array}{c} [1] \\ [-2] \end{array}$$

سوال 1

$$(-\infty, 1] = Rf$$



$$\frac{x^2 + \omega x + m}{x+1} \rightarrow \frac{x^2 + \omega x + m}{x+1} \cdot \frac{x+1}{x+1} = \frac{x^2 + \omega x + m}{x+1}$$

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سوال 2

$$(y = x + 1 + \frac{m-1}{x+1}) \cdot x+1$$

$$y(x+1) = (x+1)(x+1) + (m-1)$$

$$yx + y = x^2 + \omega x + 1 + m - 1$$

$$\rightarrow x^2 + (\omega - y)x + (m - y) = 0 \rightarrow \Delta \rightarrow b^2 - 4ac$$

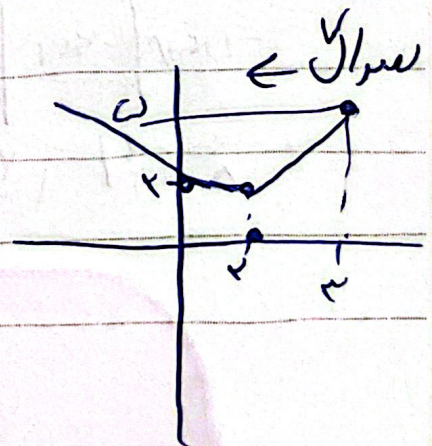
$$\rightarrow (\omega - y)^2 - 4(m - y) = 0 \Rightarrow \Delta = y^2 - 4y + 4 - 4m + 4y = y^2 - 4m$$

$$\rightarrow \Delta < 0 \rightarrow y^2 - 4m < 0 \Rightarrow m < \frac{y^2}{4}$$

$$\begin{array}{c|c|c} 0 & \omega & \\ \hline -x+2 & x^2 - \omega x + 2 & x+2 \\ \hline \end{array}$$

$$\rightarrow Rf = [1, \infty)$$

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$$f(x) \begin{cases} x^2 + [x+1] & x \leq 0 \rightarrow y_1 \\ [x] - x & x > 0 \end{cases} \quad \left| \begin{array}{l} -\frac{b}{2a} = -\frac{1}{2} \\ -1 \rightarrow [-1, +\infty) \end{array} \right. \leftarrow \text{سوال 1}$$

$$1 \leq x < k+1 \rightarrow \begin{array}{l} x = k \rightarrow k - k = 0 \\ k - (k+1) = -1 \end{array} \rightarrow (-1, 0] \rightarrow \text{Rf} \rightarrow (-1, +\infty)$$

$$y = a + 1 - \sqrt{x+1} \rightarrow \text{Rf} = [-\frac{1}{4}, +\infty) \leftarrow \text{سوال 1}$$

$$b = -\frac{1}{4}$$

$$a + 1 - \sqrt{x+1} = 0 \rightarrow \sqrt{x+1} = a + 1 \rightarrow x+1 = (a+1)^2 \rightarrow x = (a+1)^2 - 1$$

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

$$ab = \left(\frac{1}{2} - \frac{1}{4} \right) = \frac{1}{4} = \boxed{\frac{1}{4}}$$

$$f(x) = \sqrt{x+1} + \sqrt{1-x} \quad \begin{array}{l} \sqrt{x+1} \rightarrow x \geq -1 \\ 1-x \geq 0 \rightarrow x \leq 1 \end{array} \leftarrow \text{سوال 1}$$

$$\rightarrow [-1, 1] = \text{Rf} = \text{Rg}$$

$$f(x) + g(x) = \sqrt{x+1} + \sqrt{1-x} \rightarrow \sqrt{1-x} + \sqrt{1+x} \rightarrow \sqrt{1-x} + \sqrt{1+x}$$

$$\sqrt{1-x} + \sqrt{1+x} \rightarrow g(x) = \sqrt{1+x} - \sqrt{1-x}$$

$$\rightarrow \frac{f(x)}{g(x)} = \frac{\sqrt{1-x} + \sqrt{1+x}}{\sqrt{1+x} - \sqrt{1-x}} = \sqrt{1-x} \rightarrow \text{Rf} = (0, \sqrt{2}]$$