

۱۷/۲۵

سوال ۸ رابا

$$f(x) = \sqrt{1-x^2} \Rightarrow 1-x^2 \geq 0$$

$$x^2 \leq 1 \Rightarrow -1 \leq x \leq 1$$

(۱,۷۵)

$$g = \{(-1,1), (0,0), (1,1)\}$$

$$x=-1 \Rightarrow (fg-f)(-1) = f(-1) - \sqrt{1-(-1)^2} = 1 - 1 = 0$$

$$fg = f \circ g = \{(-1,1), (0,0), (1,1)\}$$

$$x=0 \Rightarrow (fg-f)(0) = f(0) - \sqrt{1-(0)^2} = 0 - 1 = -1$$

$$x=1 \Rightarrow (fg-f)(1) = f(1) - \sqrt{1-(1)^2} = 1 - 0 = 1$$

دقت! مجموع = ۱۱

$$f(x) \cdot \ln x \rightarrow Rf \cdot [1, \infty) \xrightarrow{x=1} f(1) \cdot \ln(1) = 1 \cdot 0 = 0 \Rightarrow Rf \cdot [1, \infty)$$

$$g(x) = \frac{1}{x}x + 1 \rightarrow Rg \cdot (-\infty, 1] \xrightarrow{x=1} (1) = \frac{1}{1}(1) + 1 = 2 \Rightarrow Rg \cdot (-\infty, 2]$$

$$Rf \cup Rg = (-\infty, 2] \cup [1, \infty)$$

دقت!

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

(۲)

$$-\frac{x^2}{2} + x + 1 > \frac{1}{2} \Rightarrow -\frac{x^2}{2} + x + \frac{1}{2} > 0 \xrightarrow{x(-2)} x^2 - 2x - 1 < 0 \Rightarrow (x-3)(x+1) < 0$$

x	-1	3
f(x)	+	-

$$(-1, 3) \Rightarrow \sqrt{b-a} = \sqrt{3-(-1)} = \sqrt{4} = 2 \checkmark$$

$$y = |x-1| + |x-2| + |x-3|$$

(۲)

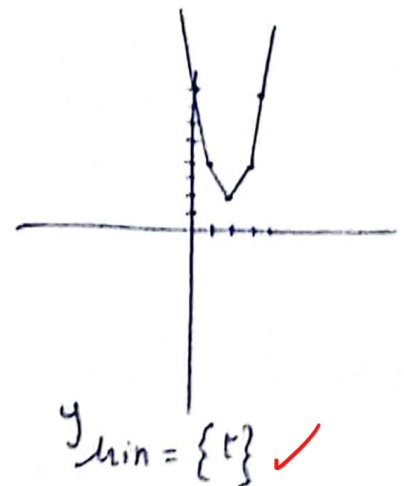
$$x=1 \Rightarrow y = |1-1| + |1-2| + |1-3| = 0 + 1 + 2 = 3$$

$$x=2 \Rightarrow y = |2-1| + |2-2| + |2-3| = 1 + 0 + 1 = 2$$

$$x=3 \Rightarrow y = |3-1| + |3-2| + |3-3| = 2 + 1 + 0 = 3$$

$$x=4 \Rightarrow y = |4-1| + |4-2| + |4-3| = 3 + 2 + 1 = 6$$

$$x=0 \Rightarrow y = |0-1| + |0-2| + |0-3| = 1 + 2 + 3 = 6$$



$$y_{\min} = \{2\} \checkmark$$

$$y = |x| - 2|x+1|$$

(1, 1.5)

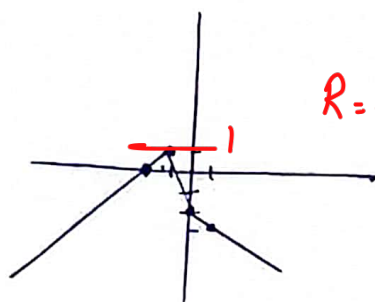
سوال ۵) برد؟

$$x=0 \Rightarrow y = |0| - 2|0+1| = 0 - 2 = -2$$

$$x=-1 \Rightarrow y = |-1| - 2|(-1)+1| = 1 - 2(0) = 1$$

$$x=1 \Rightarrow y = |1| - 2|1+1| = 1 - 2(2) = -3$$

$$x=-2 \Rightarrow y = |-2| - 2|(-2)+1| = 2 - 2(1) = 0$$



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

$$y = \frac{x^2 + 5x + 4}{x+1}$$

$$R_f = \mathbb{R}$$

$\Rightarrow$ در صورتی که $x = -1$ باشد این عبارت تعریف نشده خواهد شد. به ازای صحیح مقدار x به تابع برای $\mathbb{R}$ نخواهد بود.

سوال ۶) ۰

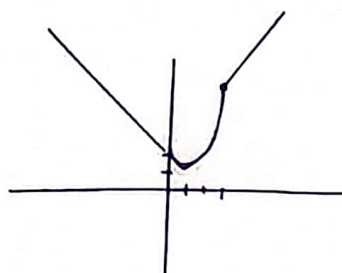
پاسخ نه ...

$$f(x) = \begin{cases} x+2 & ; x > 2 \\ x^2-2x+2 & ; 0 \leq x \leq 2 \\ |x|+2 & ; x < 0 \end{cases}$$

$$x_{ext} : -\frac{b}{2a} = -\frac{(-2)}{2(1)} = 1$$

$$y_{ext} : (1)^2 - 2(1) + 2 = 1$$

$$x=2 \Rightarrow (2)^2 - 2(2) + 2 = 2$$



$$\Rightarrow R_f = [1, +\infty) \checkmark$$

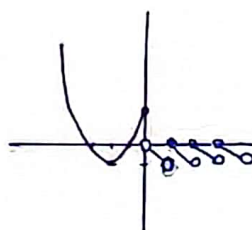
سوال ۷) (۲)

$$f(x) = \begin{cases} x^2 + 4x + 4 & ; x \leq 0 \\ [x] - 2x & ; x > 0 \end{cases}$$

$$x_{ext} : -\frac{b}{2a} = -\frac{4}{2(1)} = -2$$

$$y_{ext} : (-2)^2 + 4(-2) + 4 = -1$$

$$x^2 + 4x + 4 = (x+2)^2 = 0 \Rightarrow x = -2$$



$$[x] - 2x \Rightarrow x = a$$

$$[a] - a \in (-1, 0]$$

$$R_f = [-1, +\infty) \checkmark$$

سوال ۸) (۲)

$$y = a+1 - \sqrt{2x+3}$$

$$R_f = [b, +\infty)$$

$$R_f = (-\infty, 5] \Rightarrow R_f$$

$$a+1 = 5 \Rightarrow a = 4 \checkmark$$

$$ab = (4)\left(-\frac{3}{4}\right) = -3 \checkmark$$

سوال ۹) (۲)

$$x > -\frac{1}{2} \Rightarrow \frac{b}{a} = -\frac{1}{2} \checkmark$$

این تابع $y = a+1 - \sqrt{2x+3}$ را در $x = -\frac{3}{2}$ قرار دهیم

$$f(x) = \mu\sqrt{x+1} + \mu\sqrt{1-x} \quad D_f = D_g = -1 \leq x \leq 1 (I)$$

سوال (2)

$$f(x) + g(x) = \mu\sqrt{\mu + \mu\sqrt{1-x}} = \mu\sqrt{(\sqrt{1-x} + \sqrt{1+x})^2} = \mu(\sqrt{1-x} + \sqrt{1+x})$$

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

$$y = \frac{f(x)}{x} - \frac{g(x)}{\mu} = \frac{\mu\sqrt{x+1} + \mu\sqrt{1-x}}{x} - \frac{\sqrt{x+1} - \sqrt{1-x}}{\mu} = \frac{\mu\sqrt{x+1} + \mu\sqrt{1-x} - \sqrt{x+1} + \sqrt{1-x}}{\mu}$$

$$x=1 \Rightarrow \sqrt{1-(1)} = 0$$

$$= \frac{\mu\sqrt{1-x}}{\mu} = \sqrt{1-x} \quad \checkmark$$

$$\sqrt{1-x} \quad I$$

$$\Rightarrow x \rightarrow -1$$

$$\sqrt{1-(-1)} = \sqrt{2}$$

$$\Rightarrow R_f = [0, \sqrt{2}] \quad \checkmark$$

