

۱۹, ۲۵

نام و نام خانوادگی: ... پاسبان نامه تشریحی تکلیف شماره ۸... کلاس: ... یا زده ...

$$\{x \in \mathbb{R} \mid x^3 - 1 = 0\} \Rightarrow x^3 = 1 \Rightarrow x = 1 \text{ or } x = \omega \text{ or } x = \omega^2$$

$$\Rightarrow R = \{1, \omega, \omega^2\}$$

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دقت!

$$f(x) = x^3 - 1 \xrightarrow{D_f = [1, \infty)} x^3 - 1 = 0 \Rightarrow R_f = [0, \infty)$$

$$g(x) = \frac{1}{x} \xrightarrow{D_g = (-\infty, 0) \cup (0, \infty)} \frac{1}{x} = 1 \Rightarrow R_g = (-\infty, 1]$$

$$\Rightarrow R_f \cup R_g \rightarrow (-\infty, 1] \cup [0, \infty) \checkmark$$

$$\Rightarrow \left(\frac{-b}{2a}\right) = \frac{-1}{2(-\frac{1}{4})} = 2 \Rightarrow y_v = -\frac{1}{4}(2)^2 + 1 + 3 = \frac{3}{2} \rightarrow (2, \frac{3}{2})$$

$$y > \frac{3}{2} \Rightarrow -\frac{1}{4}x^2 + x + 3 > \frac{3}{2} \Rightarrow -x^2 + 4x + 6 > 0 \Rightarrow x^2 - 4x - 6 < 0$$

$$\Rightarrow \frac{-1}{2} \pm \sqrt{\frac{1}{4} + 6} \Rightarrow -1 < x < 3 \Rightarrow (-1, 3) = (a, b)$$

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

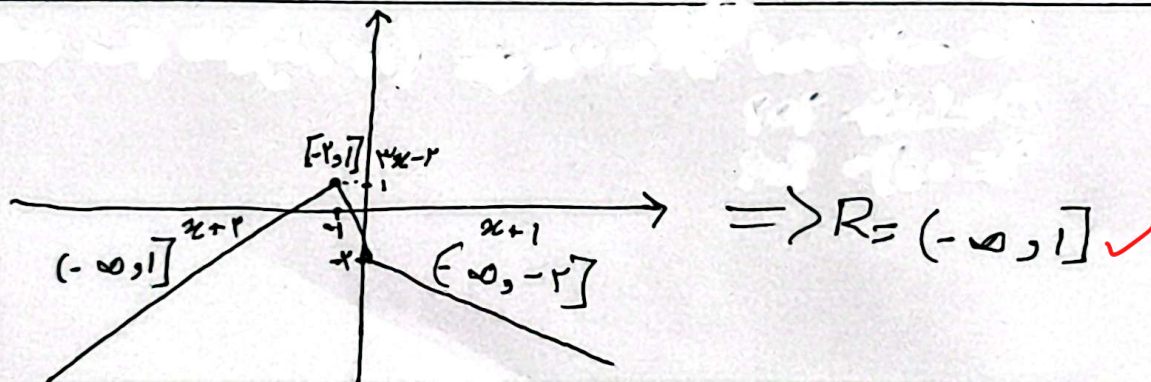
$$\Rightarrow y = |x-1| + |x+(-3)| + 2|x-2| \rightarrow x \leq 1 \Rightarrow y = (1-x) + (3-x) + 2(2-x)$$

$$\Rightarrow y = 1 - 4x \xrightarrow{\text{نزکی}} x=1 \rightarrow y = -3$$

$$1 < x < 2 \Rightarrow y = 4 - 2x \xrightarrow{\text{نزکی}} x=2 \rightarrow y = 0$$

$$2 \leq x \leq 3 \Rightarrow y = 2x - 2 \xrightarrow{\text{سوی}} x=2 \rightarrow y = 2$$

$$\Rightarrow \boxed{2} \text{ کمترین مقدار} \checkmark$$



$$\Rightarrow R = (-\infty, \infty) \checkmark$$

$\Rightarrow y = x + 1 + \frac{m-1}{x+1} \Rightarrow x \neq -1 \quad x(x+1) \rightarrow x^2 + (\Delta - y)x + (m - y) = 0$
 برای اینکه $\Delta \geq 0$ باید $y \in \mathbb{R}$ (۱, ۵)
 $\Delta = y^2 - 10y + 15 + 4y - 4m = y^2 - 6y + 15 - 4m = g(y)$
 $g(y) \geq 0 \Rightarrow$ فزینب لست $\Rightarrow (-4)^2 - 4(1)(15 - 4m) \leq 0 \Rightarrow 16m - 44 \leq 0$
 $\Rightarrow m \leq \frac{11}{4}$ دوما آنه $m = 4$ باشه ۳ از بیه حذف میشه و بی نهایت مقدار برای m اولاً گفته اعداد طبیعی!

$x < 0 \Rightarrow -x + 1 \Rightarrow R = (1, +\infty)$ ①
 $0 < x < 3 \Rightarrow (x-1)^2 + 1 \xrightarrow{\text{کینه}} x = 1 \xrightarrow{\text{بینه}} x \rightarrow 2 \Rightarrow R = [1, 5]$ ②
 $x \geq 3 \Rightarrow x + 1 \Rightarrow R = [5, +\infty)$ ③
 $\textcircled{1, 2, 3} \Rightarrow (1, +\infty) \cup [1, 5] \cup [5, +\infty) = [1, +\infty)$ ✓

$x < 0 \Rightarrow x^2 + 4x + 3 = (x+1)(x+3) \xrightarrow{\text{موتقان}} x = -2$
 $\Rightarrow (-2)^2 + 4(-2) + 3 = -1 \xrightarrow{\text{کینه}} R = [-1, +\infty)$ ①
 $x > 0 \Rightarrow f(x) = [2x] - 2x \xrightarrow{\text{نیمه}} 2x = n + \theta \Rightarrow f(x) = n - (n + \theta) = -\theta$
 $\Rightarrow 0 \leq \theta < 1$
 $\textcircled{1, 2} \Rightarrow R_f = [-1, +\infty)$ ✓

$\xrightarrow{\text{رادیکال}} 2x + 3 \geq 0 \Rightarrow x \geq -\frac{3}{2} \Rightarrow D = [-\frac{3}{2}, +\infty)$
 $\Rightarrow b = -\frac{3}{2} \leftarrow x$ بیشینه
 $y_{\max} = a + 1 - 0 = a + 1 = 5 \Rightarrow a = 4 \Rightarrow ab = 4 \times -\frac{3}{2} = -6$ ✓

$\xrightarrow{\text{رادیکال}} 1 - x \geq 0 \quad x + 1 \geq 0 \Rightarrow R = [-1, 1] \xrightarrow{\text{نیمه}} a = \sqrt{x+1}, b = \sqrt{1-x} \quad (x \geq 0)$
 $a^2 + b^2 = 2 \Rightarrow f(x) = 2a + 4b, g(x) + f(x) = 3(a+b) = S(x)$
 $y = \frac{f(x)}{4} - \frac{g(x)}{3} = \frac{f(x)}{4} - \frac{S(x) - f(x)}{3} = a + 2b - (a+b) = b \Rightarrow y = \sqrt{1-x}$
 $\Rightarrow x \in [-1, 1] \Rightarrow y = \sqrt{1-x} \in [\sqrt{1-1}, \sqrt{1-(-1)}] = [0, \sqrt{2}]$
 $R = [0, \sqrt{2}]$ ✓