

نام و نام خانوادگی ... (نام و نام خانوادگی) ۴ پاسخنامه تشریحی تکلیف شماره کلاس A

الف) $y = (x - 2[\frac{x}{2}])^2 \xrightarrow{x=0} \Rightarrow 0 - 2(0) \Rightarrow y_{\min} R_f = [0, 4]$
 $\Rightarrow R_f = [0, +\infty) \quad (2(\frac{a}{2} - [\frac{a}{2}]))^2 \rightarrow 2(\frac{a}{2} - [\frac{a}{2}])^2 \xrightarrow{[0, 1)} \quad (1)$

ب) $\log y = \sin x + 4 \xrightarrow{-1 \leq \sin x \leq 1} \Rightarrow 3 \leq \sin x + 4 \leq 5 \Rightarrow 3 \leq \log y \leq 5$
 $10^3 \leq y \leq 10^5$

$f(x) = \frac{x^2 - 4}{x^2 - 9} \rightarrow x^2 \rightarrow y_1 = \frac{-4}{-9} = \frac{4}{9}$ و $y_2 = \text{نسبت ضمیمه} = 1$

$\xrightarrow{\text{خرج صفر شود}} R'_f = (-\infty, \frac{4}{9}] \cup (1, +\infty) \Rightarrow R_f = \sqrt{R'_f}$
 $\Rightarrow R_f = [0, \frac{2}{3}] \cup (1, +\infty) \Rightarrow a+b+c = 0 + \frac{2}{3} + 1 = \frac{5}{3}$

الف) $x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}} = (\sqrt{x + \frac{1}{x}} + 1)^2 - 1 \xrightarrow{x \geq 0} (\sqrt{2} + 1)^2 - 1$
 $\Rightarrow y_{\min} = 2 + 1 + 2\sqrt{2} - 1 = 2 + 2\sqrt{2} \Rightarrow R_f = [2 + 2\sqrt{2}, +\infty)$

ب) $-\sin^2 x + 2\sin x + 3 \begin{cases} \xrightarrow{1} - (1)^2 + 2(1) + 3 = 4 \\ \xrightarrow{-1} - (-1)^2 + 2(-1) + 3 = 0 \\ \xrightarrow{-\frac{b}{2a} = 1} \end{cases} \Rightarrow R_f = [0, 4]$

$D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\} \Rightarrow f(x) = (\frac{-1}{3}(1) + 10)(\frac{-1}{3}(2) + 10) + \dots + (\frac{-1}{3}(9) + 10)$

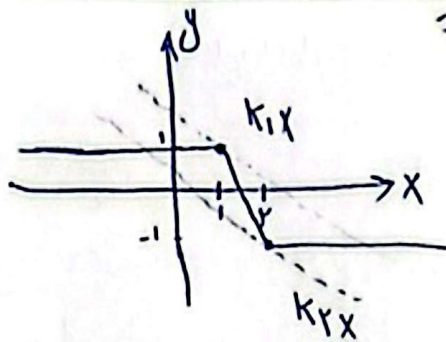
$\xrightarrow{\text{مقدورگیری}} \frac{-1}{3}(1+2+\dots+9) + 9 \times 10 = \frac{-1}{3}(\frac{9 \times 10}{2}) + 90 = 75$

$f(3) = 1 \Rightarrow 1 = \sqrt{9a + 3b + c} \Rightarrow 9a + 3b + c = 1$

$ax^2 + bx + c \geq 0 \xrightarrow{D_f \geq 0} \begin{matrix} \text{منحنی} \\ \text{y} \\ \text{x} \end{matrix} \rightarrow a=0 \rightarrow bx+c$

$x=2 \rightarrow 2b + c = 0 \Rightarrow c = -2b$, $3b + c = 1 \Rightarrow b=1, c=-2$

$g(x) = \sqrt{x^2 + 4} \rightarrow x^2 \rightarrow y_{\min} = \sqrt{4} = 2 \Rightarrow R_f = [2, +\infty)$



$$f(x) = |x-2| - |x-1|$$

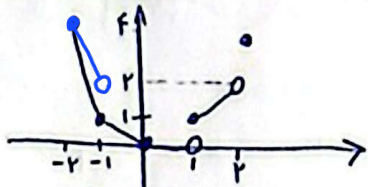
$$k_1 x \rightarrow x=1 \Rightarrow k_1 \cdot 1 = 1 \Rightarrow k_1 = 1$$

$$k_2 x \rightarrow x=2 \Rightarrow 2k_2 = -1 \Rightarrow k_2 = -\frac{1}{2}$$

$$y=x$$

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الف



$$(-2, -1] \rightarrow -2x$$

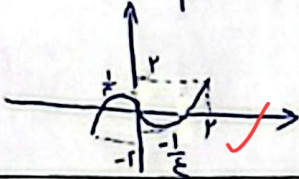
$$(-1, 0] \rightarrow -x$$

$$(0, 1] \rightarrow 0$$

$$(1, 2] \rightarrow x$$

$$R_f = [0, 2] - \{1\}$$

ب)



$$y \begin{cases} x \geq 0 \\ x < 0 \end{cases} \begin{cases} x^2 - x \rightarrow \frac{-b}{2a} = \frac{1}{2} \rightarrow \frac{1}{2} \\ -x^2 - x \rightarrow \frac{-b}{2a} = \frac{1}{2} \rightarrow \frac{1}{2} \end{cases}$$

$$R_f = [-2, 2]$$

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

مخرج مشترك

$$x \neq 0$$

$$x+1 \neq 0 \Rightarrow x \neq -1$$

$$P_f = R - \{0, -1\}$$

$$a+b = -2$$

$$u = \begin{cases} 0 \rightarrow \frac{2}{0} \rightarrow \infty \\ -1 \rightarrow \frac{2}{-1} \rightarrow -2 \end{cases} \Rightarrow R_f = R - \{0, -2\}$$

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$$f(x) = \frac{x - \sqrt{x} + 3}{x - 2\sqrt{x} + 1}$$

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

$$R_f = R - \{1\}$$

$$\Leftrightarrow y \neq 1$$

$$\Rightarrow yx - x = -1$$

$$\Rightarrow yx - x = -1$$

$$\Rightarrow x = \frac{-1}{y-1}$$

$$R_f = (-\infty, 1) \cup [3, +\infty)$$

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$$\frac{-x^3 + 2x^2 - x - 2}{-x^3 + x} \Big| \frac{x^2}{x+1} \Rightarrow f(x) = x+1$$

$$a+b = 1$$

$$x^2 - 1 = (x-1)(x+1) \Rightarrow P_f = R - \{1, -1\}$$

$$f(x) \rightarrow \begin{cases} x=1 & x+1=2 \\ x=-1 & x+1=0 \end{cases} \Rightarrow R_f = R - \{1, 0\}$$

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