نام و نام خانوادگی ...احمدعلی زاده مرتضی...... پاسخنامه تشریحی تکلیف شماره ۳...... کلاس دوازدهم......(A)......

۱

$yx - y = x^2 + x + 2 \Rightarrow x^2 + (1-y)x + y + 2$

$\Delta \geq 0 \Rightarrow b^2 - 4ac \geq 0 \Rightarrow (1-y)^2 - 4y - 8 \geq 0 \Rightarrow y^2 - 2y + 1 - 4y - 8$

$\Rightarrow y^2 - 6y - 7 \geq 0 \to (y-7)(y+1)$

	-1		7	
$+$		$-$		$+$

$\Rightarrow R_f = (-\infty, -1] \cup [7, +\infty)$

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الف) $\frac{-b}{2a} = \frac{5}{4} \Rightarrow 2(\frac{5}{4})^2 - 5(\frac{5}{4}) + 1 = \frac{-17}{8} \Rightarrow R_f = [\frac{-17}{8}, +\infty)$

ب) $\frac{-b}{2a} = 3 \Rightarrow \sqrt{-9+18-5} = \sqrt{4} = 2 \Rightarrow R_f = [0, 2]$

ج) $\Rightarrow R_f = [0, +\infty)$

د) $\Rightarrow R_f = (-\infty, +\infty)$

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الف) $R_f = R - [\frac{5}{4}] \Rightarrow R_f = R - [\frac{3}{2}]$

ب) $R_f(\frac{4x+1}{x-2}) = [0, +\infty) - [\frac{4}{1}] \Rightarrow R_f\ \sqrt{\frac{4x+1}{x-2}} = \sqrt{[0, +\infty) - 4} \Rightarrow R_f = [0, +\infty) - [2]$

ج) $R_f,\ x^2 \geq 0 \to \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3} \Rightarrow R_f = [\frac{4\sqrt{3}}{3}, +\infty)$

د) $y + 4 = x^2 + 4 + \frac{1}{x^2+4} \xrightarrow{x=0} y + 4 = 4\frac{1}{4} \Rightarrow R_f = [\frac{1}{4}, +\infty)$

۴

روش ۱: $yx^2 - y = 3x^2 + 4 \Rightarrow yx^2 - 3x^2 = y + 4 \Rightarrow x^2 = \frac{y+4}{y-3}$

$x = \pm\sqrt{\frac{y+4}{y-3}}$

	-4		3	
$+$		$-$		$+$

$\Rightarrow R_f = (-\infty, -4] \cup (3, +\infty)$

روش ۲: $x^2 = 0 \to y = \frac{0+4}{0-1} = -4,\ x^2 \to \infty \Rightarrow y \approx 3$ ($\frac{3}{1}$) تقسیم ضرایب

$\Rightarrow R_f = (-\infty, -4] \cup (3, +\infty)$

۵

$y\sin x + 3y = 2\sin x - 1 \to y\sin x - 2\sin x = -3y - 1 \to \sin x = \frac{-3y-1}{y-2}$

$\Rightarrow -1 \leq \frac{-3y-1}{y-2} \leq 1 \Rightarrow R_f = [\frac{-3}{2}, \frac{1}{4}]$ تابع پیوسته $\Rightarrow D_f = R$

روش ۲: $-1 \leq \sin x \leq 1 \Rightarrow y_1 = \frac{2\times 1 - 1}{1+3} = \frac{1}{4},\ y_2 = \frac{2\times(-1) - 1}{-1+3} = \frac{-3}{2}$

چون تابع همواره پیوسته است $\Rightarrow R_f = [\frac{-3}{2}, \frac{1}{4}]$

۶

$f(x) = \frac{(x-\frac{1}{2})^2}{(x-\frac{1}{2})^2+\frac{3}{4}} \to$ مخرج $\neq 0 \Rightarrow D_f = R$

$\xrightarrow{(x-\frac{1}{2})\to t} \Rightarrow f(x) = \frac{t^2}{t^2+\frac{3}{4}}$

$\xrightarrow{t=0} \Rightarrow y_1 = 0 ,\ t = \infty \to y_2 = 1$

$R_f = (-\infty, 0] \cup (1, +\infty)$

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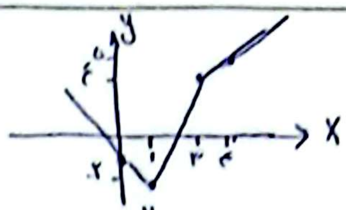
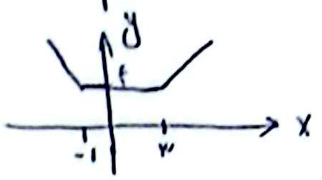
الف)



$(0,-1), (1,-2), (3,4), (4,5)$

$D_f = R,\ R_f = [-2, +\infty)$

ب)



$D_f = R,\ R_f = [4, +\infty)$

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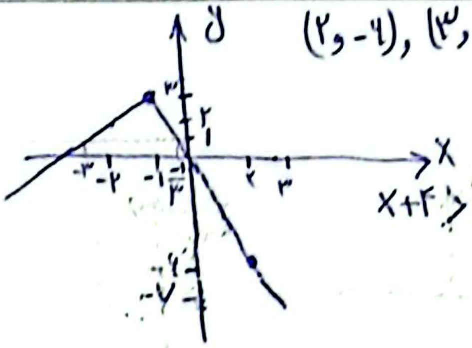

$(2,-6), (3,-7), (-1,3), (-2,2)$

	-1		2	
$x+4$		$-3x$		$-x-4$

$x+4 \geq 1 \Rightarrow x \geq -3 ,\ 1 \geq -3x \Rightarrow \frac{-1}{3} \geq x$

حاصل $= R - (\frac{-1}{3}, -3)$

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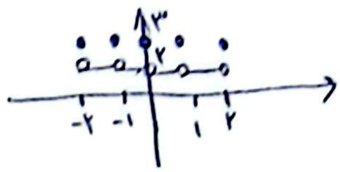
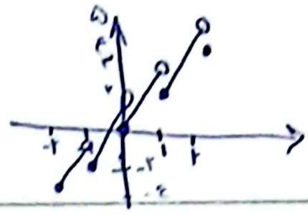
الف)



ب)



۱۰

الف)

$\sin x \begin{cases} 1 \Rightarrow 1 - 1 + 1 = 1 \\ -1 \Rightarrow 1 - (-1) + 1 = 3 \end{cases}$

$\frac{-b}{2a} = \frac{1}{2} \Rightarrow \frac{1}{4} - \frac{1}{2} + 1 = \frac{3}{4}$

$\Rightarrow R_f = [\frac{3}{4}, 3]$

ب)

$\sin^2 x \begin{cases} 1 \Rightarrow 1 + 1 + 1 = 3 \\ 0 \Rightarrow 0 + 0 + 1 = 1 \end{cases}$

$\frac{-b}{2a} = \frac{-1}{2} \Rightarrow (\frac{-1}{2})^2 + \frac{-1}{2} + 1 = \frac{3}{4}$

$\Rightarrow R_f = [\frac{3}{4}, 3]$