فرانک آقائی ۱۹٫۲۵ تکلیف ستاره ۷ یازدهم دختر C

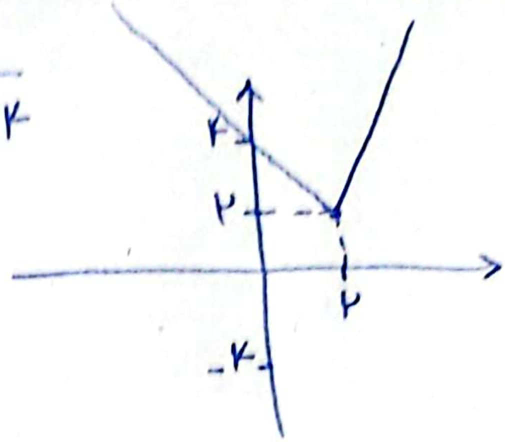
1. (۲)

الف) $y = x + |2x - 4|$ ⟶

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

(بالای جدول: ۲ — زیر جدول: ۲)

$R_f = [2, +\infty)$



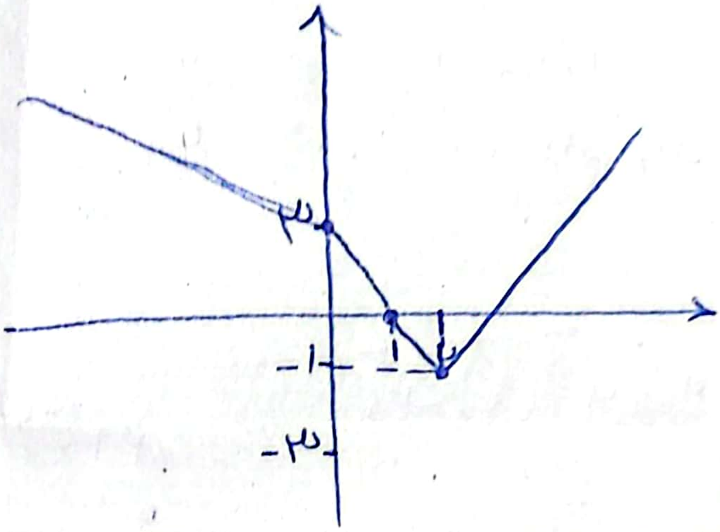
ب) $y = |x-2| + |x-1| - |x|$

	۰	۱	۲

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

(زیر جدول: ۳ ، ۰ ، ۱-)

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



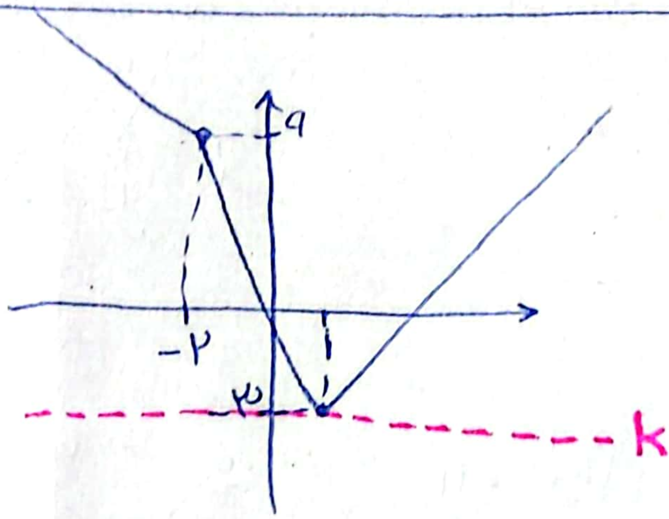
2. (۳)

	-۲	۱

$-2x+5$	$-4x-1$	$2x-5$

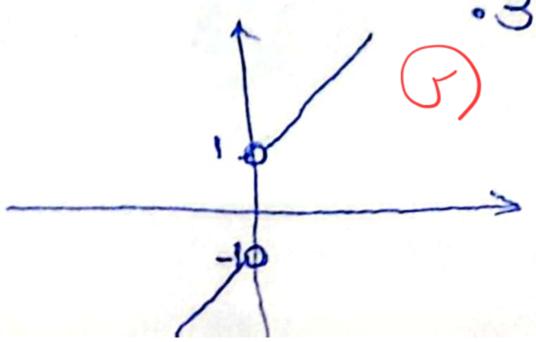
(زیر جدول: ۹ ، ۳-)

$k = -3$ ⟶ چون فقط یک ریشه دارد

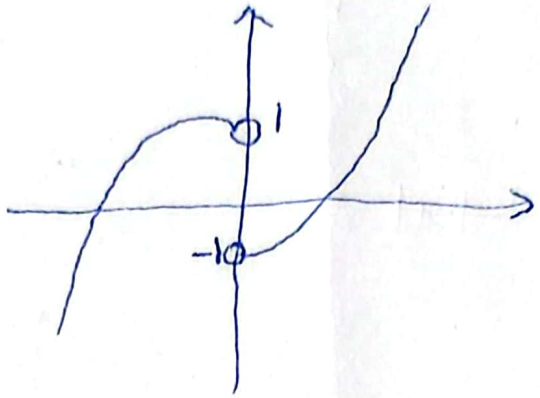


3. (۳)

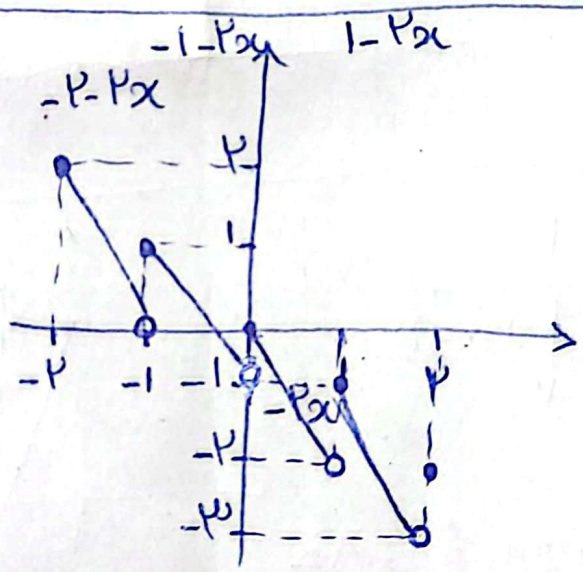
الف) $y = x + \frac{x}{|x|}$ ⟶ $\begin{cases} x<0 \to x-1 \\ x>0 \to x+1 \end{cases}$



ب) $y = x|x| - \frac{x}{|x|} \longrightarrow \begin{cases} x<0 \longrightarrow y = -x^2 + 1 \\ x>0 \longrightarrow y = x^2 - 1 \end{cases}$

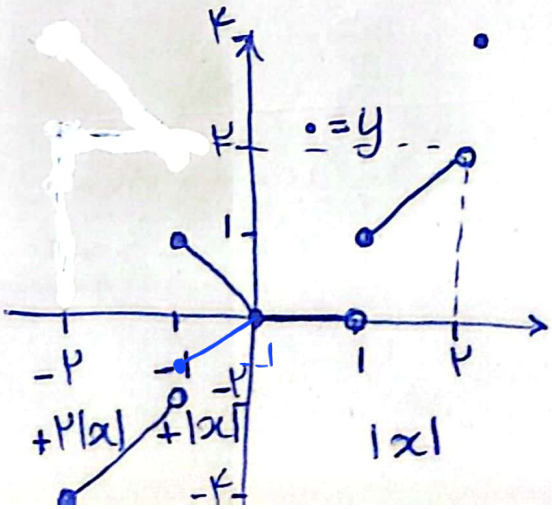


الف) $y = [x] - 2x$ .4



1,10

ب) $[x]|x| = y$



.5

الف) $y = 3x - [3x] \longrightarrow 0 \leq x - [x] < 1 \longrightarrow Rf = [0, 1)$

ب) $y = 4x - 4[x] \longrightarrow 4(x - [x]) \longrightarrow Rf = [0, 4)$

ج) $y = x - 5\left[\frac{x}{5}\right] \rightarrow 5\left(\frac{x}{5} - \left[\frac{x}{5}\right]\right) = y \longrightarrow Rf = [0, 5)$ (5)

د) $y = [2x] - 2x \rightarrow (2x - [2x]) = y \longrightarrow Rf = (-1, 0]$

.6

الف) $y = 3\sin x + 2\cos x \longrightarrow -\sqrt{9+4} \leq 3\sin x + 2\cos x \leq \sqrt{13}$

$Rf = [-\sqrt{13}, \sqrt{13}]$ (5)

ب) $-\sqrt{16+9} = -\sqrt{25} = -5 \longrightarrow Rf = [-5, +5]$

ج) $-\sqrt{4+25} = -\sqrt{29} \leq [\quad] \leq \sqrt{29} \longrightarrow [3\sin x + 5\cos x] =$

$-5 < -4 < -3 < -2 < -1 < 0 < 1 < 2 < 3 < 4 < 5$

$Rf = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

د) $-\sqrt{5} \leq \quad \leq \sqrt{5} \longrightarrow Rf = [0, \sqrt{5}]$

.7

الف) $y = \sin^2 x + 3\sin x + 2 \longrightarrow \frac{-b}{2a} = \frac{-3}{2} \longrightarrow f\left(\frac{-3}{2}\right) = -\frac{1}{4}$

$f(1) \longrightarrow 6$

$f(-1) \longrightarrow 0$

$\left[-\frac{1}{4}, 6\right] = Rf$

(1,5)

ب) $y = 2\sin^2 x + 3\sin x + 2 \longrightarrow \frac{-b}{2a} = \frac{-3}{4} \longrightarrow f\left(\frac{-3}{4}\right) = \frac{7}{8}$

$f(1) \longrightarrow 2 + 3 + 2 = 7$

$f(-1) \longrightarrow 2 - 3 + 2 = 1$

$\left[\frac{7}{8}, 7\right] = Rf$

.8

الف) $(\sin^2 x + 3\cos^2 x) = 1 + \underbrace{3\cos^2 x}_{[0,3]} \rightarrow Rf = \underbrace{\quad}_{[1,4]}$

ب) $\frac{2\cot x}{\underbrace{1+\cot^2 x}_{\frac{1}{\sin^2 x}}} \Rightarrow \underbrace{2\cos x \sin x}_{\sin(2x)} \rightarrow Rf = [-1,1]$

.9

$y = \sin^4 x + \cos^4 x \longrightarrow$

$\frac{1}{2} \leq \sin^4 x + \cos^4 x \leq 1 \longrightarrow$

$2^{1-2} \leq \sin^4 x + \cos^4 x \leq 1$

$2^{-2} = \frac{1}{4}$

$Rf = [\frac{1}{4}, 1]$

ب) $y = [\sin^2 x + \cos^2 x] \longrightarrow 2^{1-2} \leq [\sin^2 x + \cos^2 x] \leq 1 \longrightarrow$

$2^{-2} = \frac{1}{4}$

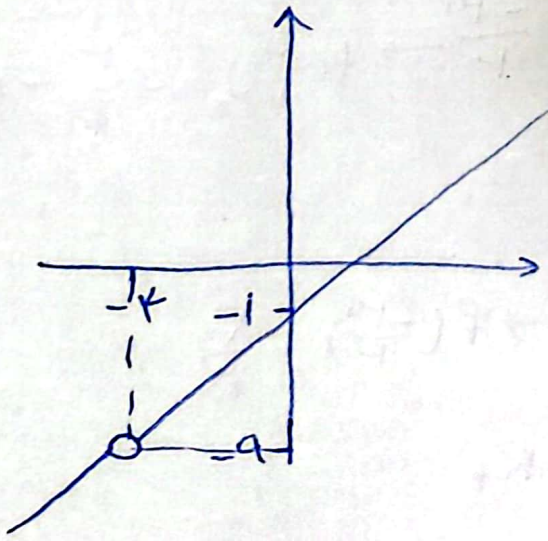
$Rf = \{0, 1\}$

.10

الف) $x^2 + 7x - 8 \rightarrow (x+8)(x-1) \xrightarrow{\div 2} \frac{(x+4)(2x-1)}{x+4} \rightarrow x \neq -4$

$2(-4) - 1 = -9$

$\rightarrow R - \{-9\} = Rf$



$$y = \frac{x^3 - 1}{x - 1} = \frac{(x-1)(x^2+x+1)}{x-1} \longrightarrow \frac{-b}{2a} = \frac{-1}{2} \rightarrow y = \frac{3}{4}$$

$x \neq 1 \rightarrow x = 1 \rightarrow y = 3$

$Rf = [\frac{3}{4}, +\infty)$