

۱۹، ۲۵

۲)

الف $\sqrt{x-1} + 1 = x \Rightarrow \sqrt{x-1} = x-1 \Rightarrow (x-1)^2 = (x-1)^2 \Rightarrow x^2 - 2x + 1 = x^2 - 2x + 1 \Rightarrow 0 = 0$

$R_f = \mathbb{R}$ ✓

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

$\Delta \geq 0 \Rightarrow \frac{1-y}{y} \geq 0 \Rightarrow (y+1) \geq 0 \Rightarrow y \geq -1$

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

الف $x^2 - 2x + 1 = 0 \Rightarrow \begin{cases} -b \\ \frac{2a}{a} \end{cases} = 2$

$R_f = [2, \infty)$ ✓

ب $x^2 - 2x + 1 = 0 \Rightarrow \begin{cases} -b \\ \frac{2a}{a} \end{cases} = 2$

$R_f = (-\infty, 2]$ ✓

ج $\sqrt{x^2+1} = x \Rightarrow \begin{cases} -b \\ \frac{2a}{a} \end{cases} = 2$

$R_f = [0, \infty)$ ✓

د $\sqrt{6x-x^2} = x \Rightarrow \begin{cases} -b \\ \frac{2a}{a} \end{cases} = 2$

$R_f = [0, 3]$ ✓

الف $x^2 - 2x + 1 = 0 \Rightarrow R_f = \mathbb{R}$ ✓

۳)

ب $x^2 - 2x + 1 = 0 \Rightarrow R_f = \mathbb{R}$ ✓

ج $y = \sqrt{x^2+1} \Rightarrow R_f = [0, \infty)$ ✓

د $y = (x^2+2x+1)^2 \Rightarrow R_f = [0, \infty)$ ✓

الف $y = \frac{x+1}{x-1} \Rightarrow R_f = \mathbb{R} - \left\{\frac{a}{c}\right\} = \mathbb{R} - \{1\}$ ✓

۴)

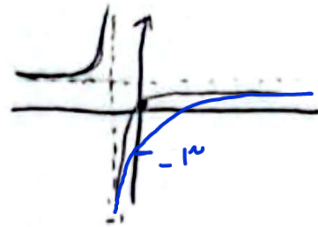
ب $y = \frac{x+1}{x+1} \Rightarrow R_f = \mathbb{R} - \{1\}$ ✓

الف $y = \sqrt{\frac{x+1}{x-1}} \Rightarrow R_f = [0, \infty) - \{\sqrt{1}\}$ ✓

۵)

ب $y = \sqrt{\frac{x+1}{x-1}} \Rightarrow R_f = [0, \infty)$ ✓ $\frac{a}{c} = 1$

الف $y = \frac{x-3}{x+1}$ | جانب د = $\frac{-1}{2}$ ✓



(1.5)

ب $y = \frac{x-4}{x+2}$ | جانب د = $\frac{-2}{3}$ ✓



محل برخورد خطوط را
محدوده خلیه ها مشخص
و به این ترتیب
⇒

(2)

الف $y = \sin x + \frac{1}{\sin x} \rightarrow R_f = (-\infty, 0] \cup [1, \infty)$ ✓

ب $y = \frac{x^2+1}{x^2} \rightarrow x^2 + \frac{1}{x^2} \Rightarrow R_f = (-\infty, 0] \cup [1, \infty)$ ✓

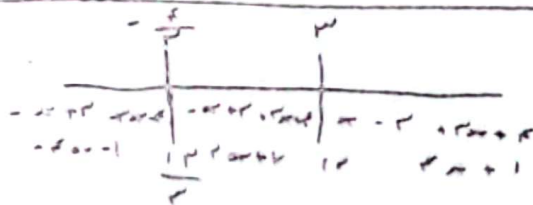
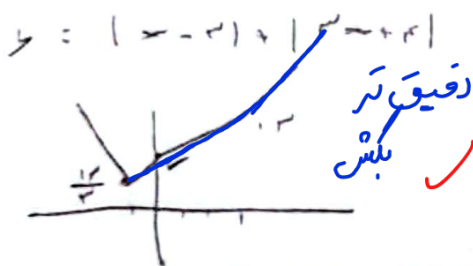
ج $y = \frac{\sqrt{x^2+1}}{\sqrt{x}} \rightarrow \sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow (-\infty, 0] \cup [1, \infty)$ ✓

د $y = \sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow R_f = [1, \infty)$ ✓

(1.75)

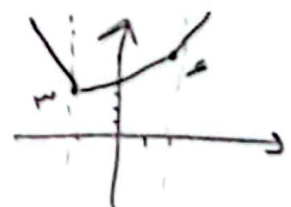
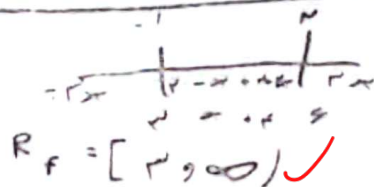
الف $y = x^2 + \frac{1}{x^2+2} \xrightarrow{x^2+2} (x^2+2) + \frac{1}{x^2+2} \xrightarrow{x^2+2} R_f = [\frac{1}{2}, \infty)$

ب $y = \frac{x^2+2}{\sqrt{x^2+2}} \rightarrow \frac{(x^2+2)+1}{\sqrt{x^2+2}} \rightarrow \sqrt{x^2+2} + \frac{1}{\sqrt{x^2+2}} \rightarrow R_f = [1, \infty)$ ✓



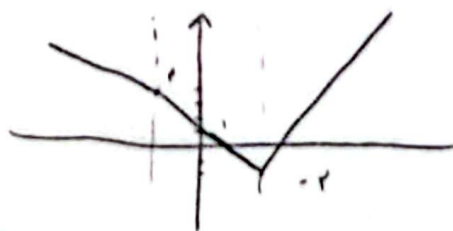
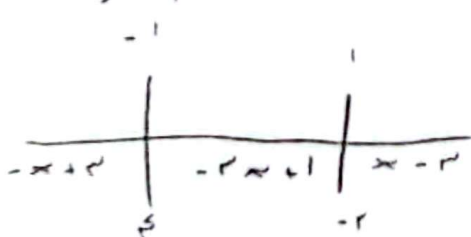
(2)

الف $y = |x-2| + |x+2|$



(2)

ب $y = |2x-2| - |x+1|$



$R_f = [-1, \infty)$ ✓