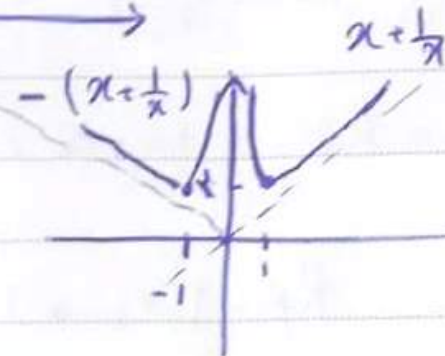
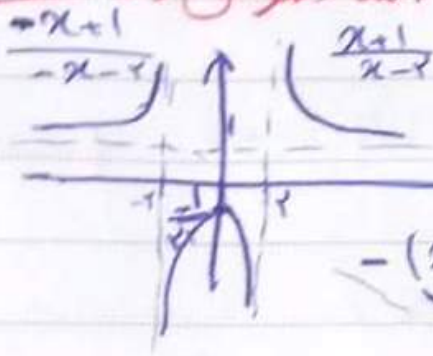


12A اساتذات راد

$$R_f = R - \left(-\frac{1}{x}\right)$$

1- الف



$$R_f = [2, +\infty)$$

2- ب

$$\frac{x^2 + 3x - (x+2)}{x+2} = x - \frac{x+2}{x+2}$$

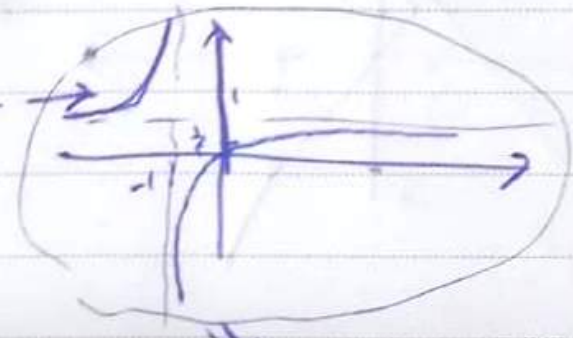
3- ج

$$\Rightarrow x+2 \leq t \rightarrow t-2 - \frac{t-1}{t} \leq t-2 - 1 + \frac{1}{t} \leq \frac{t+1}{t} = f$$

$$(-\infty, -2] \cup [2, +\infty)$$

$$R_f = (-\infty, -2] \cup [2, +\infty)$$

$$\frac{x^2 - x \leq t}{x+1} \Rightarrow \frac{t+1}{t+1} = f$$



4- د

$$\text{if } t \leq -\frac{1}{x} \Rightarrow f \geq 0 \Rightarrow R_f = [0, 1]$$

$$-x^2 + (x-1) \rightarrow R = (-\infty, 2] \Rightarrow R_f = [0, \sqrt{2}]$$

5- هـ

$$2x^2 - 1x \rightarrow [-1, +\infty) \Rightarrow R_f = [-2, +\infty)$$

6- و

$\sin \begin{cases} 1 \rightarrow 1 \\ -1 \rightarrow \sqrt{x} \\ \frac{1}{x} \rightarrow \frac{x}{e} \end{cases} \Rightarrow R_f \subseteq \left[ \frac{x}{e}, +\infty \right)$

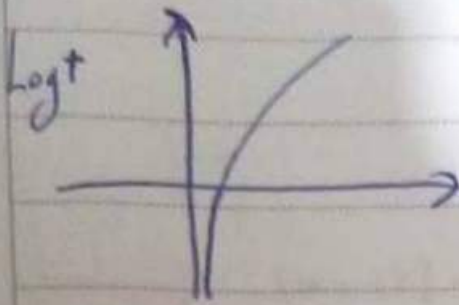
١٥- الفت

$\sin^2 \begin{cases} 1 \rightarrow x \\ 0 \rightarrow 1 \\ -\frac{1}{x} \rightarrow x \end{cases} \quad R_f \subseteq [1, +\infty)$

١٦- الفت

$$x^2 - x + 1 \rightarrow R \subseteq \mathbb{R} \Rightarrow R_f = \mathbb{R}$$

(الف-1)

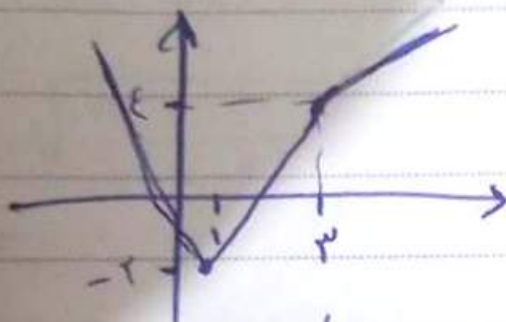


$$\text{Log}_{d_1} \left( x + \frac{1}{x} \right) \rightarrow (-\infty, -2] \cup [2, +\infty)$$

ج د ع

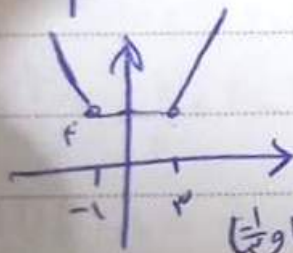
(ب-1)

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



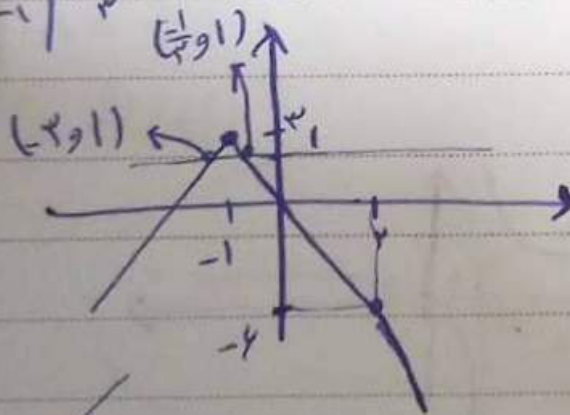
$$R_f = [-2, +\infty)$$

(ج-1)



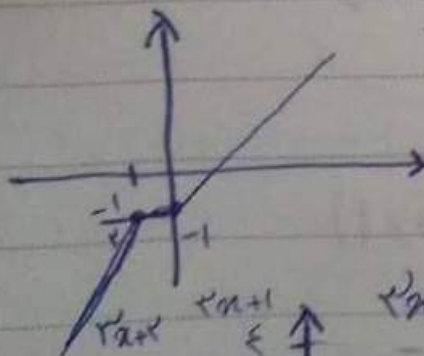
$$R_f = [1, +\infty)$$

(د-1)

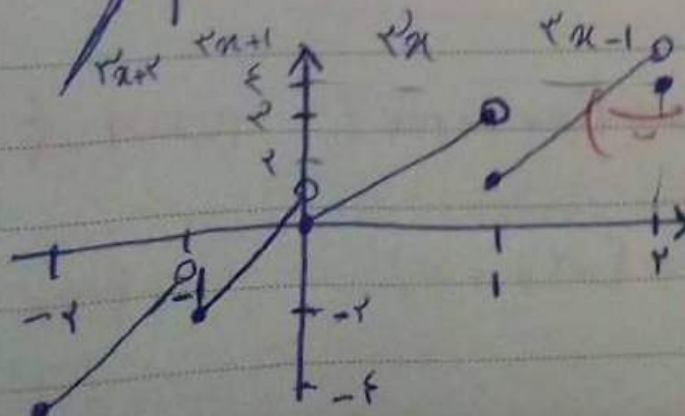


$$\mathbb{R} - (-2, -\frac{1}{2})$$

(ه-1)



$$\mathbb{R} - 1$$



$$[x] + [-x] + x$$

(و-1)

