

٢٠

$$|x| = \frac{1+y+1}{y-1}$$

$$y_1 = 1$$

$$y_2 = -\frac{1}{2}$$

$$\frac{-\frac{1}{2}}{1-0} = \frac{1}{0} +$$

(الف) (٢)

$$R_f = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$$

$$y = \frac{|x|^2 + 1}{|x|} = |x| + \frac{1}{|x|} \Rightarrow R_f = [2, +\infty) \quad (ب)$$

$$x^2 - x + 1 \neq 0$$

$$b^2 - 4ac = 1 - 4 = -3 < 0 \Rightarrow \text{لا توجد حلول حقيقية}$$

$$D_f = \mathbb{R}$$

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

$$\min (x - \frac{1}{2})^2 = 0$$

$$\max (x - \frac{1}{2})^2 + \frac{3}{4} \Rightarrow \approx 1$$

$$R_f = [0, 1)$$

$$yx + 3y = x^2 + 2x - 2 \Rightarrow x^2 + (2-y)x - 2-3y = 0$$

$$b^2 - 4ac \geq 0 \Rightarrow (2-y)^2 + 1 + 12y \geq 0 \quad y^2 + 10y + 5 \geq 0$$

$$(y+5)(y-1) \geq 0 \quad y_1 = -5 \quad y_2 = 1$$

$$R_f = (-\infty, -5] \cup [1, +\infty)$$

$$\frac{b}{2a} = \frac{-2}{-2} = 1 \quad \Delta = 4 - 4 = 0 \Rightarrow R = \sqrt{(-\infty, 1]} = 1 \quad (الف) (٢)$$

$$R_f = [0, 1]$$

$$\frac{b}{2a} = \frac{1}{2} = 1$$

$$\min_y =$$

$$y_{\min} = 1 - 1 \times 1 = -1$$

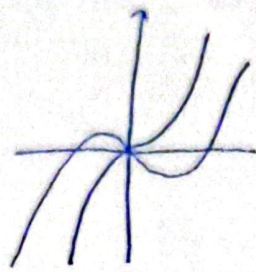
$$R = \sqrt{[-1, +\infty)} =$$

(ب)

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

$$y = x^x \cdot x + 1$$

شکل



$$\Rightarrow R_f = \mathbb{R}$$

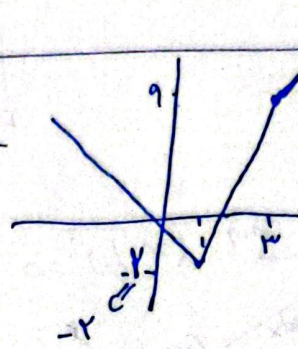
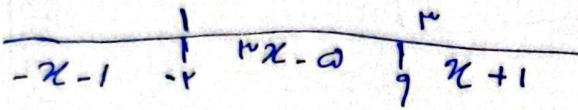
$$\log R \Rightarrow \boxed{R_f = \mathbb{R}}$$

(۲)

$$\frac{x^x + 1}{x} = x + \frac{1}{x} \quad \begin{cases} x > 0 \\ x < 0 \end{cases} \Rightarrow R' = [2, +\infty)$$

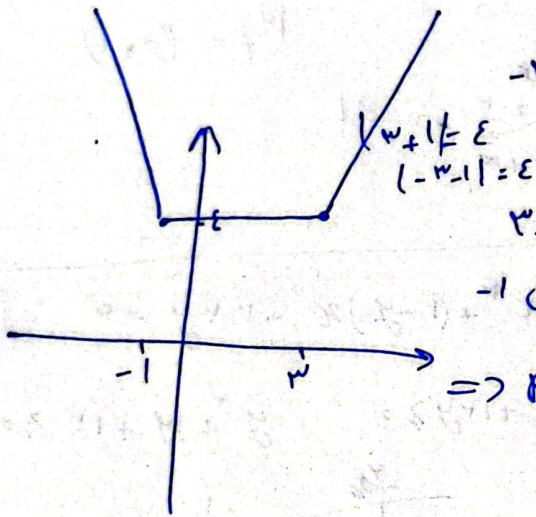
log یی ۰

$$\log_2 (x, +\infty) \Rightarrow R_f = [1, +\infty)$$



(۲) الف

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



$$x + 1/x = \varepsilon$$

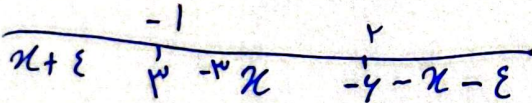
$$|-x-1| = \varepsilon$$

$$\Rightarrow x = \varepsilon$$

$$\Rightarrow x = -1$$

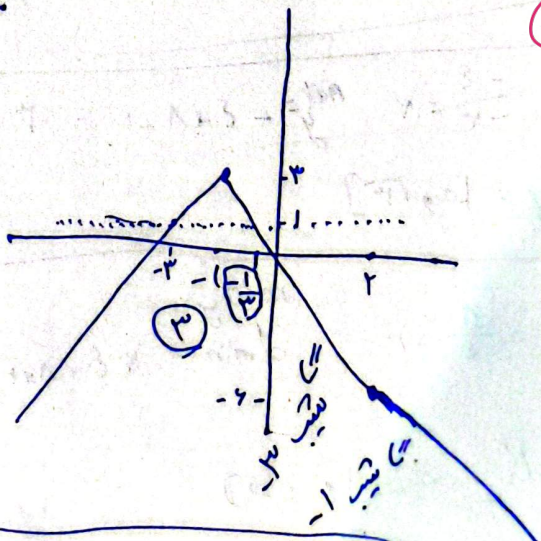
$$\Rightarrow R_f = [\varepsilon, +\infty)$$

ب) گلدونی



$$x + \varepsilon \leq x \leq -x$$

$$-x \leq x \leq -\frac{1}{x}$$



$$\textcircled{1} \cap \textcircled{2} \cap \textcircled{3} \Rightarrow R_f = (-\infty, -3] \cup [-\frac{1}{3}, +\infty)$$

(۲) -V

$$|x| = + \frac{+2y+1}{y-1}$$

$$y_1 = 1$$

$$y_2 = -\frac{1}{2}$$

$$+ \frac{-\frac{1}{2}}{0} - \frac{1}{\frac{1}{2}} +$$

۱- الف)

$$R_f = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$$

$$y = \frac{|x|^2 + 1}{|x|} = |x| + \frac{1}{|x|} \xrightarrow{x \neq 0} R_f = [2, +\infty) \quad \text{ب)}$$

$$x^2 - x + 1 \neq 0$$

$$b^2 - 4ac = 1 - 4 = -3 \Rightarrow \text{مطلوب است}$$

$$D_f = \mathbb{R}$$

$$f(x) = \frac{(x - \frac{1}{2})^2}{(x - \frac{1}{2})^2 + \frac{1}{4}}$$

$$\begin{aligned} \min & \quad (x - \frac{1}{2})^2 = 0 \\ \max & \quad (x - \frac{1}{2})^2 + \frac{1}{4} \approx 1 \end{aligned}$$

نسبتی

$$R_f = [0, 1)$$

سوال ۳۲ و ۳۳ سوال ۰۲

$$yx + 2y = x^2 + 2x - 2 \Rightarrow x^2 + (2-y)x - 2 - 2y = 0$$

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

$$(y+1)(y+3) \geq 0 \quad y_1 = -3 \quad y_2 = -1$$

$$+ \frac{-3}{0} - \frac{-1}{0} +$$

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

$$\frac{-b}{2a} = \frac{-\varepsilon}{-2} = \frac{\varepsilon}{2} \quad \text{max}_y = -\varepsilon + 1 - 1 = -\varepsilon \Rightarrow R = \sqrt{(-\infty, \varepsilon]} \Rightarrow \text{الف)}$$

$$R_f = [0, \sqrt{\varepsilon}]$$

$$\frac{-b}{2a} = \frac{1}{\varepsilon} = 2$$

$$\min_y = y_{\min} = \sqrt{\varepsilon - 1 \times 2} = -1$$

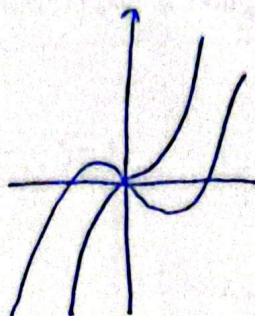
$$R = \sqrt{[-1, +\infty)} \Rightarrow$$

ب)

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

$$y = x^3 - x + 11$$

شکل



$$\Rightarrow R_f = \mathbb{R}$$

$$\log^R \Rightarrow \boxed{R_f = \mathbb{R}}$$

الف - ۵

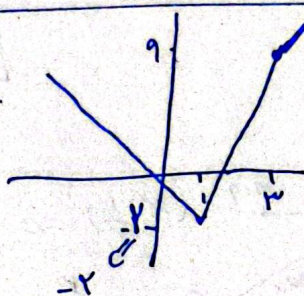
$$\frac{x^2+1}{x} = x + \frac{1}{x} \quad \begin{cases} x > 0 \\ x < 0 \end{cases} \Rightarrow R' = [2, +\infty)$$

log برای $x > 0$

$$\log_{1/2} [2, +\infty) \Rightarrow R_f = [1, +\infty)$$

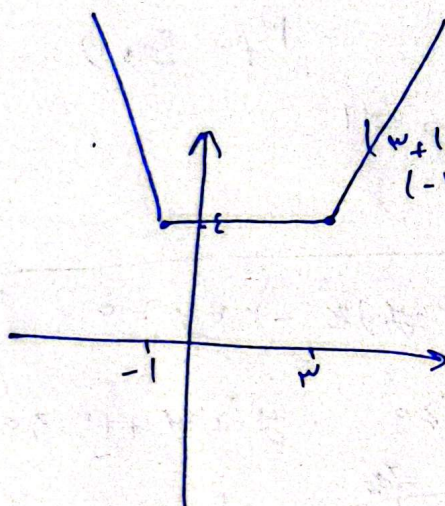
ب -

$$-x-1 \quad -\frac{1}{2} \quad x-1 \quad x+1$$



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

الف - ۶



$$|x+1| = \varepsilon$$

$$|-x-1| = \varepsilon$$

$$\Rightarrow 2 \text{ شیب عدد}$$

$$-2 \text{ شیب قبل}$$

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

ب - گلدونی

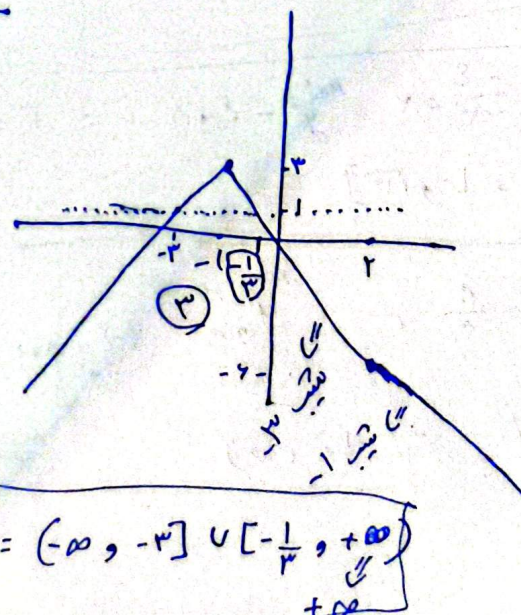
تقدیری

$$x+1 \leq -1 \quad x \leq -2$$

$$\textcircled{1} \quad x \leq -2$$

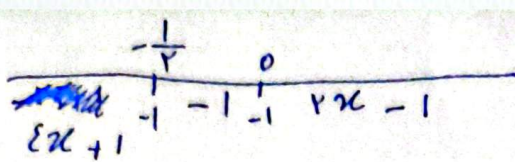
$$\textcircled{2} \quad x \geq -\frac{1}{2}$$

$$\textcircled{1} \cap \textcircled{2} \Rightarrow$$

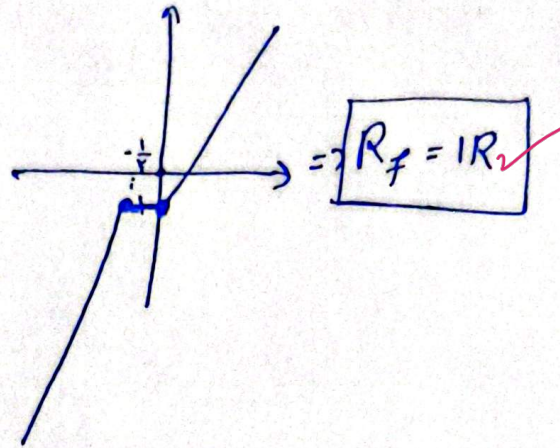


$$D_f = (-\infty, -2] \cup [-\frac{1}{2}, +\infty)$$

۷ -

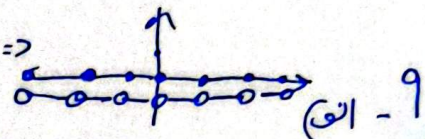


(2)

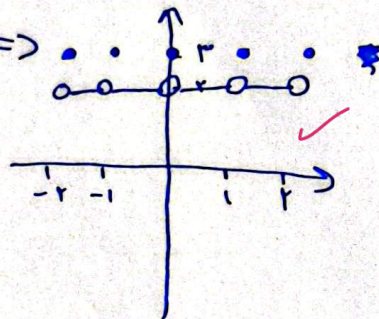


$$y = [x] + [-x] + 3$$

$$[x] + [-x] \Rightarrow$$

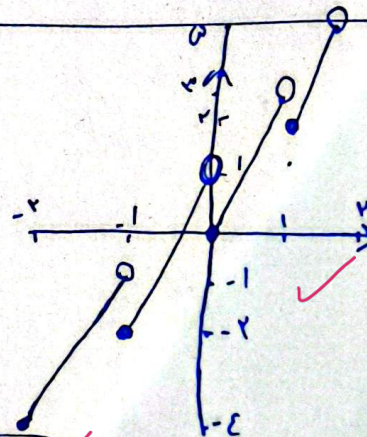
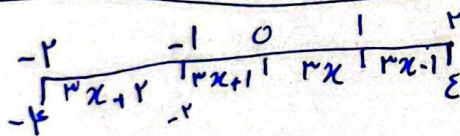


$$[x] + [-x] + 3 \Rightarrow$$



$$R_f = \{3\}$$

(2)



$$R_f = IR$$

$$R_f = [-\varepsilon, \varepsilon]$$

$$= [-2, 2] \text{ دلی بازه}$$

$$y = (\sin^r)^r + \sin^r + 1$$

$$\max = 1 \Rightarrow y = 3$$

$$\min = 0 \Rightarrow y = 1$$

$$\frac{-b}{2a} = -\frac{1}{r} \Rightarrow \text{فوق برای } \sin^r = \text{محدود است} \Rightarrow$$

$$R_f = [1, 3]$$

(2)

$$\max = 1 \Rightarrow y = 1$$

$$\min = -1 \Rightarrow y = 1 + 1 + 1 = 3$$

$$\frac{-b}{2a} = \frac{1}{r} \Rightarrow y = \frac{1}{\varepsilon} - \frac{1}{r} + 1 = \frac{3}{\varepsilon} \Rightarrow$$

$$R_f = [\frac{3}{\varepsilon}, 3]$$

۱-الف (2)