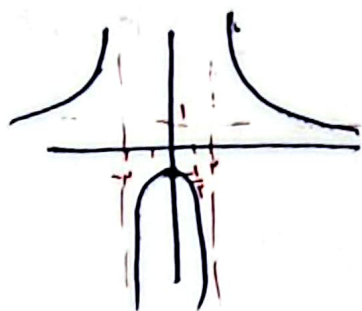


ملک ۵

سایا مایا

الف) $\frac{x+1}{x-2} \xrightarrow{x \geq}$

$\frac{-x+1}{-x-2} \xrightarrow{x \leq}$



$R_f: (-\infty, -\frac{1}{3}] \cup (1, +\infty)$

ب) $\frac{x^2+1}{|x|} = |x| + \frac{1}{|x|} \Rightarrow [2, +\infty)$
 مثبت ریبیل

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

$(x-y)^2 - 4(1) \leq (y+1)^2 \Rightarrow y^2 + 1 \geq y^2 + 2y + 1 \Rightarrow 0 \geq 2y \Rightarrow y \leq 0$

$y \leq -2 \Rightarrow R_f: (-\infty, -2] \cup [2, +\infty)$

$x^2 - x + 1 \rightarrow \Delta < 0 \Rightarrow R_f \subseteq R$

$y(x^2 - x + 1) = x^2 - x + \frac{1}{y} \Rightarrow (y-1)x^2 - (y-1)x + (y-\frac{1}{y}) = 0$

$\Rightarrow (y-1)^2 - 4(y-1)(y-\frac{1}{y}) \geq 0 \Rightarrow 0 \leq y \leq 1$

$\Rightarrow R_f \subseteq [0, 1]$

$1 \cdot \frac{1}{1} = \frac{1}{1} \Rightarrow$

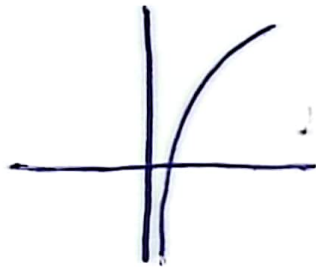
الف) $\frac{-\Delta}{4a} \leq 3 \Rightarrow 0 \leq -x^2 + 4x - 1 \leq 3 \Rightarrow 0 \leq y \leq \sqrt{3}$

$R_f \subseteq [0, \sqrt{3}]$

ب) $\frac{-\Delta}{4a} \leq -1 \Rightarrow [-1, +\infty) \xrightarrow{f} [2, +\infty)$

ثبت $x^p - x + 1 > 0$

مفروضه



$$R_F = R$$

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ب) $\frac{x^p + 1}{x} \geq x + \frac{1}{x} \Rightarrow x \in [1, +\infty)$

$\Rightarrow \log_p^p \leq \log_r^p \Rightarrow [1, +\infty)$

مفروضه

الف)

$$n < 1 \Rightarrow -n - 1$$

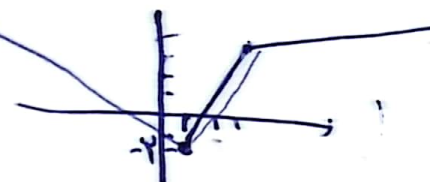
$$1 \leq n < 3 \Rightarrow n - 2$$

$$n \geq 3 \Rightarrow n + 1$$

ب)



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



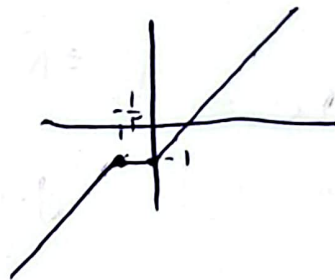
$$R_F = [-2, +\infty)$$

النتيجة

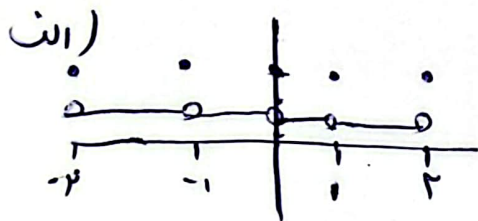
-1	μ
$n+1 < 1$	$-n-1 < 1$
$n < -\mu$	$n > -\frac{1}{\mu}$
$[-\infty, -\mu]$	$[-\frac{1}{\mu}, \mu]$
	$[1, +\infty)$

$$\Rightarrow R_F = (-\infty, -\mu] \cup [-\frac{1}{\mu}, +\infty)$$

$-\frac{1}{\mu}$	0
f_{n+1}	p_{n-1}
	-1

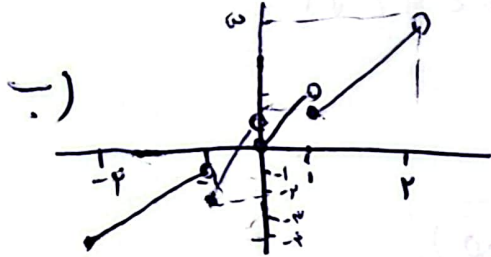


$$R_F = \mathbb{R}$$



$$[n] + [-n] + \mu$$

$$R_F = \{\mu, \mu\}$$



$$\begin{aligned} -1 < n < 1 &\rightarrow \mu_n \\ 1 < n < \mu &\rightarrow \mu_{n-1} \\ -1 < n < 0 &\rightarrow \mu_{n+1} \\ -\mu < n < -1 &\rightarrow \mu_{n+\mu} \end{aligned} \quad R_F = [-\mu, \mu]$$

$$\text{النتيجة} \quad -\frac{b}{\mu a} \leq \frac{1}{\mu} \Rightarrow F\left(\frac{1}{\mu}\right) \leq \frac{1}{\mu} - \frac{1}{\mu} + 1 = \frac{\mu}{\mu}$$

$$\Rightarrow R_F = \left[\frac{\mu}{\mu}, \mu\right]$$

$$\Rightarrow \frac{b}{\mu a} \leq \frac{1}{\mu} \Rightarrow F(1) \leq \mu \Rightarrow R_F = [1, \mu]$$