

$$(x-1)^p = 1 \rightarrow x^p - px + 1 = 1 \rightarrow x^p - px = 0 \quad x \rightarrow 0 \text{ قیست}$$

$$x^p - px = 0 \rightarrow x(x^{p-1} - p) = 0 \rightarrow x = 0 \text{ یا } x^{p-1} = p$$

$$x = 0 \text{ یا } x = \sqrt[p-1]{p}$$

نکته: $x > 1$

$$\text{الف) } -p < \frac{px-1}{x} < p \rightarrow \frac{px-1}{x} < p \rightarrow \frac{1}{x} > 0 \rightarrow x \in (0, +\infty) \quad (1)$$

$$-p < \frac{px-1}{x} \rightarrow \frac{px-1}{x} > -p \rightarrow px-1 > -px \rightarrow 2px > 1 \rightarrow x > \frac{1}{2p}$$

$$\rightarrow x \in \left(\frac{1}{2p}, +\infty\right)$$

$$\text{ب) } \frac{x-p}{px+1} > 1 \rightarrow \frac{x+p}{px+1} < 0 \rightarrow \frac{-p}{+} \mid \frac{-\frac{1}{p}}{-} \mid \rightarrow x \in \left(-p, -\frac{1}{p}\right)$$

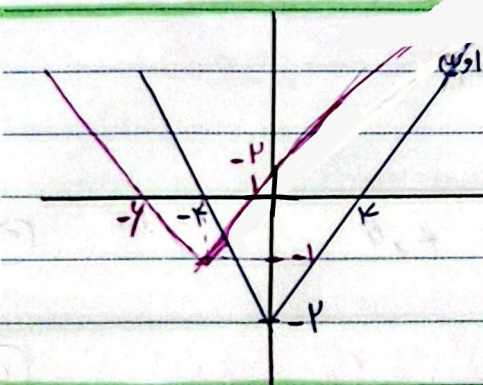
$$\frac{x-p}{px+1} < -1 \rightarrow \frac{-\frac{1}{p}}{+} \mid \frac{\frac{1}{p}}{-} \mid \rightarrow x \in \left(-\frac{1}{p}, \frac{1}{p}\right)$$

$$\rightarrow \left(-p, \frac{1}{p}\right)$$

$$x+4 > x^p \rightarrow (x-3)(x+2) < 0 \quad x \mid \frac{-2}{+} \mid \frac{3}{-} \mid \rightarrow x \in (-2, 3) \quad (2)$$

$$x+4 < -x^p \rightarrow \text{برای } x < 0 \text{ بررسی می‌کنیم}$$

$$-2 < x < 3 \rightarrow \left|x - \frac{1}{p}\right| < \frac{a}{p} \rightarrow x = \frac{1}{p}$$



$$\left|\frac{1}{p}x\right| - p = \left|\frac{1}{p}x + p\right| - 1 \quad (3)$$

$$\left|\frac{1}{p}x\right| - \left|\frac{1}{p}x + p\right| = 1 \xrightarrow{p} |x+p| = -px - a$$

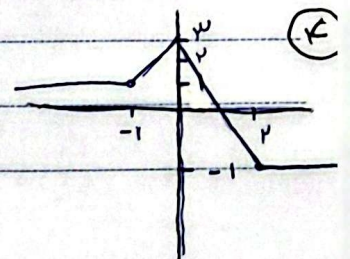
$$x \rightarrow -p \text{ یا } x \rightarrow -1$$

$$\text{Max} \rightarrow x=0 \rightarrow y=p$$

$$\text{Min} \rightarrow x=p \rightarrow y=-1$$

$$\rightarrow p-1=p$$

-1	0	p
1	$px+p$	$-px+p$
		-1



الف) $R_f = \{-\omega, -\tau, \dots, \tau, \omega\}$ (4)

ب) $f(x) = \frac{1}{x} - \left[1 + \frac{1}{x}\right] \rightarrow f(x) = \frac{1}{x} - \left[\frac{1}{x}\right] - 1 \rightarrow -1 < R_{f(x)} < 0$

$-1 < x < -\frac{1}{p} \rightarrow y = 0$

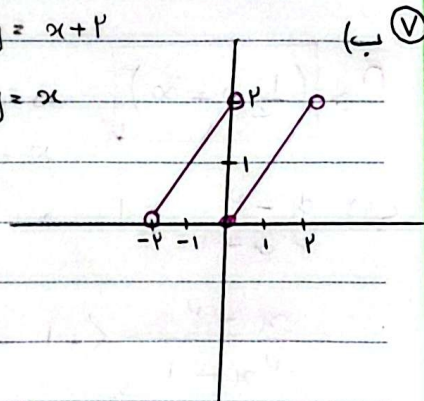
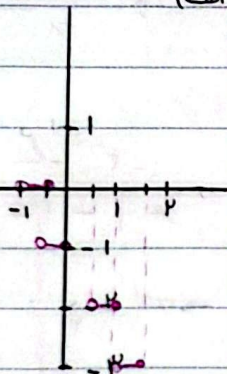
$-\frac{1}{p} < x < 0 \rightarrow y = -1$

$0 < x < \frac{1}{p} \rightarrow y = -p$

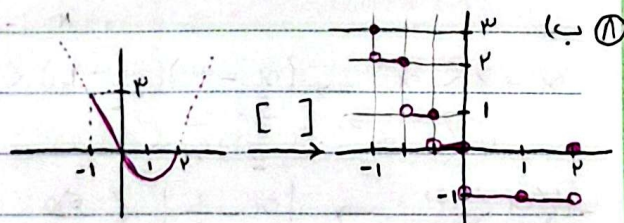
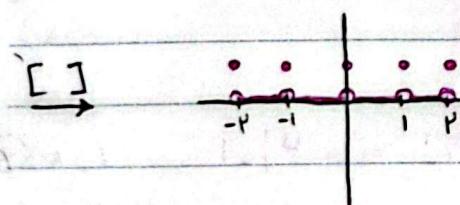
$\frac{1}{p} < x < 1 \rightarrow y = -p^2$

(الف) $-p < x < 0 \rightarrow y = x + p$

$0 < x < p \rightarrow y = x$



(الف) $y = |x| - 1$ $\rightarrow$ $y = ||x| - 1|$



$x^p - px$

$x = -1 \rightarrow y = p$

$x = p \rightarrow y = 0$

$a = p, \kappa \quad a = 1/p \quad a + b = 1/p + p/\kappa = \kappa, 4$ (9)

$(1+\sqrt{p})^4 + (1-\sqrt{p})^4 = 1911 \rightarrow 0 < \sqrt{p} - 1 < 1 \rightarrow 0 < (\sqrt{p} - 1)^4 < 1$ (10)

$(\sqrt{p} - 1)^4$

$(1+\sqrt{p})^4 = 1911 - (1-\sqrt{p})^4 \rightarrow 1911 < (1+\sqrt{p})^4 < 1911$

$\Rightarrow [(1+\sqrt{p})^4] = 1911$