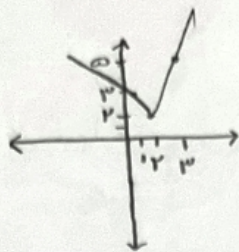


19,0

۷

فصل زانو شستی



1,10

1) $y = k + |x - 4|$

$x = 4 \rightarrow y = k \rightarrow \boxed{k = 1}$

$1 \rightarrow y + |x - 4| = y$

$1 \rightarrow 1 + |x - 4| = 1 + x - 4 \quad R_y, [2, +\infty)$

$1 \rightarrow y + |x - 4| = \infty$

ب) $y = |x - 1| + |x - 1| - |x|$

$1 \rightarrow |x - 1| + |x - 1| - |x| = 0 \quad |x|$

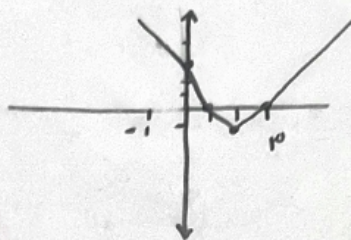
$1 \rightarrow |x - 1| + |x - 1| - |x| = -1 \quad |x|$

$1 \rightarrow |x - 1| + |x - 1| - |x| = 0 \quad |x|$

$0 \rightarrow |x - 1| + |x - 1| - |x| = 0 \quad |x|$

$-1 \rightarrow |x - 1| + |x - 1| - |x| = -1 \quad |x|$

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



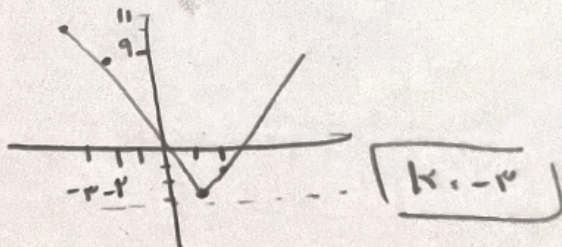
$|x - 1| - |x + 1| < k$

$-1 \rightarrow |-4 - 1| - |-2 + 1| < k \quad |x|$

$-1 \rightarrow |-9 - 1| - |-3 + 1| < k \quad |x|$

$1 \rightarrow |x - 1| - |x + 1| < -1 \quad |x|$

$1 \rightarrow |x - 1| - |x + 1| < -1 \quad |x|$



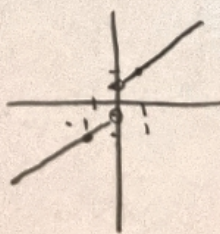
$\boxed{k = -1}$

ج) $y = k + \frac{x}{|x|}$

$x = 1 \rightarrow y = k + 1$

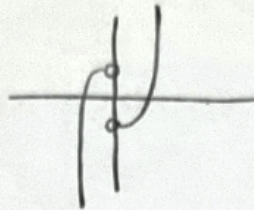
$1 \rightarrow y = 1$

$-1 \rightarrow y = -1$

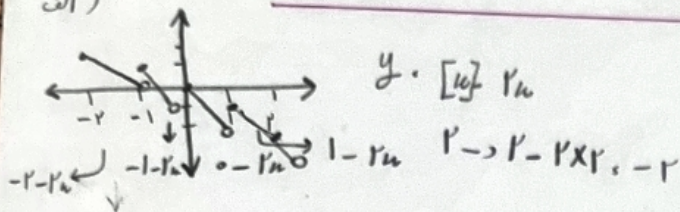


ب) $y = k|u| - \frac{k}{|u|}$

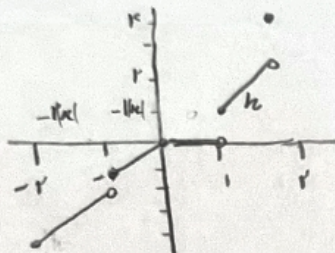
$-k^2 + 1 \leq k^2 - 1$



الف)



ب) $[u]|u| \rightarrow$



$y = k - [u]k$

الف) $y = r_k - [r_k] \rightarrow R_y = [0, 1)$

ب) $y = r_k - r[u] \xrightarrow{x^f} f(u - [u]) \rightarrow R_y = [0, f)$

ج) $y = u - a \left[\frac{u}{a} \right] \xrightarrow{\frac{u}{a}} a \left(\frac{u}{a} - \left[\frac{u}{a} \right] \right) \rightarrow R_y = [0, a)$

د) $y = [ru] - r_k \xrightarrow{x^{-1}} r_k - [r_k] \rightarrow R_y = (-1, 0]$

$y = r \sin u + r \cos u \rightarrow$

$-\sqrt{9+16} \leq r \sin u + r \cos u \leq \sqrt{9+16}$

$\sqrt{13} R_y = [-\sqrt{13}, \sqrt{13}]$

$y = r \sin u - r \cos u \rightarrow$

$-\sqrt{14+9} \leq r \sin u - r \cos u \leq \sqrt{14+9}$

$\sqrt{23} R_y = [-\sqrt{23}, \sqrt{23}]$

$$y = \sin^4 u + \cos^4 u \rightarrow r^{-1} \leq \sin^{r(1^*)} u + \cos^{r(1^*)} u \leq 1 \rightarrow \frac{1}{r} \leq \sin^4 u + \cos^4 u \leq 1 \quad (9)$$

(5)

$$y = [\sin^4 u + \cos^4 u] \rightarrow r^{-1} \leq \sin^{r(1^*)} u + \cos^{r(1^*)} u \leq 1 \rightarrow \frac{1}{r} \leq \sin^4 u + \cos^4 u \leq 1$$

(10)

$$y = \frac{r_n^r + v_n - r}{n+r} \rightarrow P_y = R - \{-r\}$$

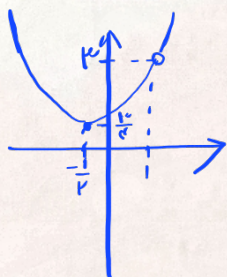
$$y, r_n - 1 \rightarrow -1 - 1 = -2 \rightarrow R_y = \boxed{R - \{-1\}}$$

$$y = \frac{(n+r)(r_n - 1)}{n+r} \quad (11)$$

$$y = \frac{n^r - 1}{n-1} = \frac{(n-1)(n^{r-1} + n^{r-2} + \dots + 1)}{n-1} \rightarrow P_y = R - \{1\}$$

(1, 10)

$$\left[\frac{r}{\varepsilon} + \infty \right] - \{r\}$$



$$\frac{1}{\varepsilon} + 1 + \frac{1}{r} \rightarrow \frac{1 + \varepsilon - r}{r} = \frac{r}{\varepsilon}$$

$$n^r + 1 + n \rightarrow 1 + 1 + 1 = 3$$