

$$الف) y = x + |2x - 5|$$

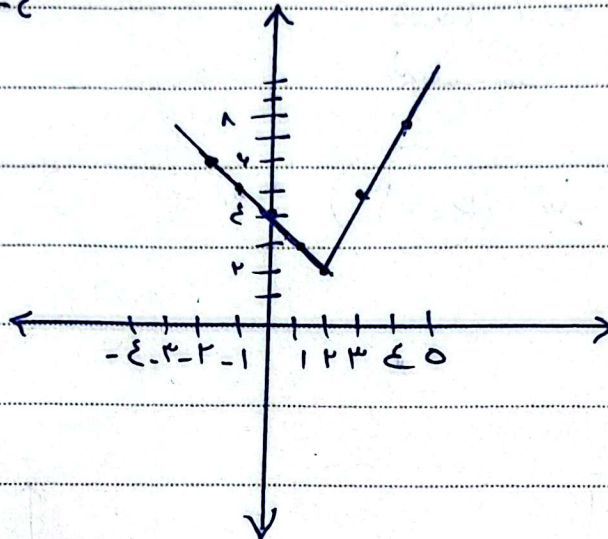
$$2x = 5 \rightarrow x = 2.5$$

$$\begin{array}{c} x \\ \hline x - 2x + 5 \quad | \quad x + 2x - 5 \\ \hline -x + 5 \quad \quad 3x - 5 \end{array}$$

$$\begin{array}{c|ccc} x & 2 & 3 & 5 \\ \hline y & 2 & 0 & 1 \end{array}$$

$$\begin{array}{c|cccc} x & 2 & 3 & 5 & 7 \\ \hline y & 2 & 0 & 1 & 3 \end{array}$$

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



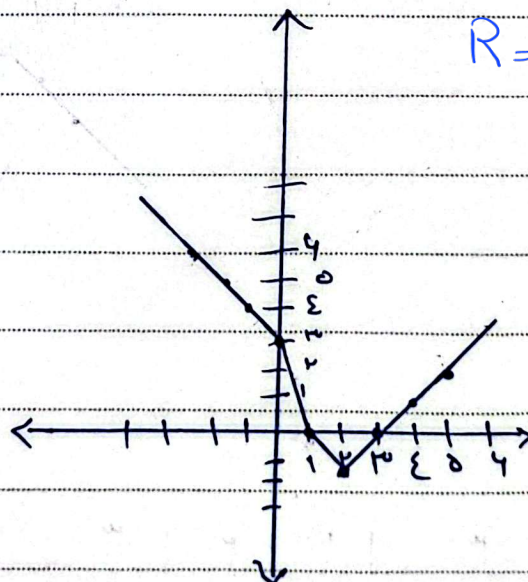
نوشته برد

$$ب) y = |x - 2| + |x + 1| - |x|$$

$$\begin{array}{c|ccccc} x & 0 & 1 & 2 & 3 & 5 \\ \hline y & 3 & 0 & -1 & 0 & 1 \end{array}$$

$$\begin{array}{c|ccc} x & 0 & 1 & 2 \\ \hline -x+3 & 3 & 2 & 1 \\ -2x+3 & 3 & 1 & -1 \\ -x & 0 & -1 & -2 \end{array}$$

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



Subject

Date : Year:

Month:

Day:

$$|km - k| = |a + 2| = K$$

$9 \quad k=2 \quad a=2$

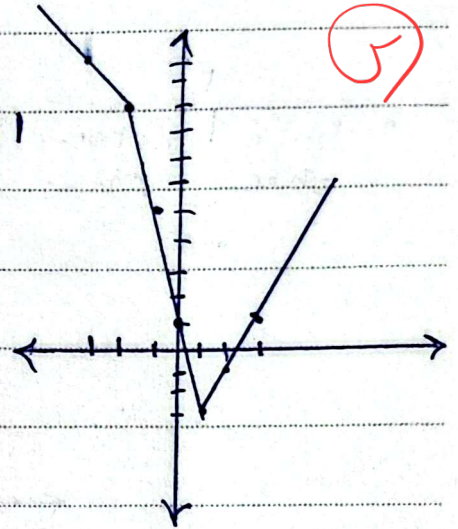
این معادله یک خطی در مقدار K (۶)

$$\begin{array}{c|c|c} -2 & 1 & \\ \hline -k a + k a + 2 & -k a + k a - 2 & k m - k a - 2 \end{array} \rightarrow \min \text{ با } \Rightarrow 1$$

(۴) $-k a + 0$ (۳) $k m - 0$

نقطه 0 0 0

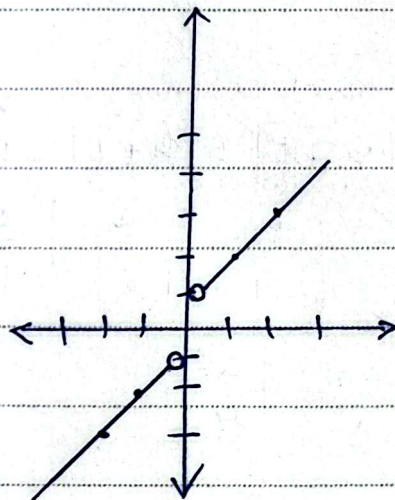
$$f(1) \Rightarrow -k \quad (k=3)$$



الف) $y = a + \frac{a}{|a|}$

$$\begin{array}{c|c} 0 & \\ \hline a-1 & a+1 \end{array}$$

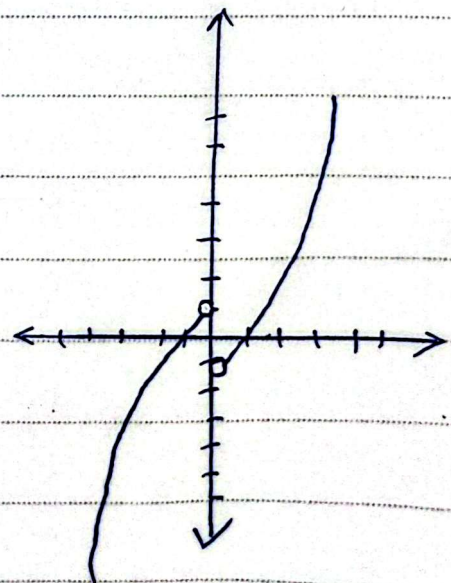
$$\begin{array}{c|c|c|c} -1 & -2 & 1 & 2 \\ \hline -2 & -3 & 2 & 3 \end{array}$$



ب) $a|a| = \frac{a}{|a|}$

$$\begin{array}{c|c} 0 & \\ \hline -a+1 & a-1 \end{array}$$

$$\begin{array}{c|c|c|c|c} -1 & -2 & -3 & 1 & 2 & 3 \\ \hline 0 & -3 & -4 & 0 & 3 & 4 \end{array}$$



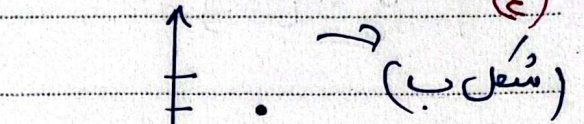
الف) $y = [u] - 2m$

if $u \leq -2$ $\left| \begin{array}{c} 2 \\ -2 \end{array} \right|$ $1 \leq u < 2 \rightarrow 1 - 2m$

$0 \leq u < 1 \rightarrow -2m$

$-1 \leq u < 0 \rightarrow -2m - 1$

$-2 \leq u < -1 \rightarrow -2m - 2$



ب) $[u] | u |$

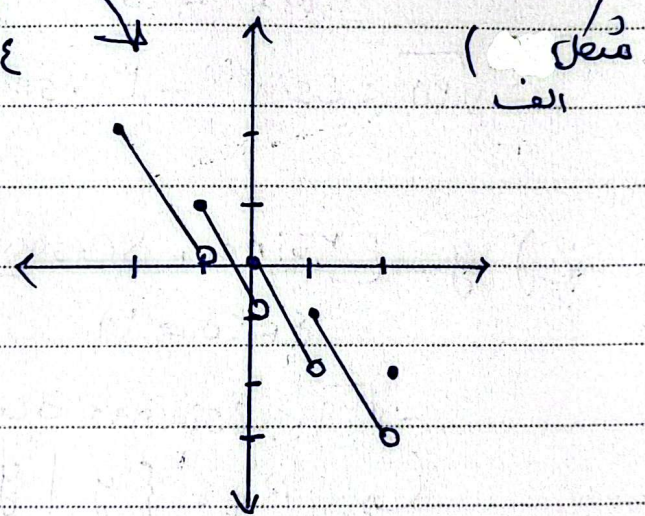
if $u \leq -2$ $\left| \begin{array}{c} 2 \\ \varepsilon \end{array} \right|$ if $u \leq -2$ $\left| \begin{array}{c} -2 \\ -\varepsilon \end{array} \right|$

$1 \leq u < 2 \rightarrow |u|$

$0 \leq u < 1 \rightarrow 0$

$-1 \leq u < 0 \rightarrow -|u|$

$-2 \leq u < -1 \rightarrow -2|u|$



الف) $y = 3m - [3u]$ $0 \leq u - [u] < 1$

$-1 < [u] - u \leq 0$

$Ry = [0, 1)$

ب) $y = \varepsilon m - \varepsilon [u]$ $Ry = [0, \varepsilon)$

$\varepsilon(u - [u]) \rightarrow [0, +\infty)$

ج) $y = u - \delta \left[\frac{u}{\delta} \right]$

$\delta \left(\frac{u}{\delta} \right) - \delta \left[\frac{u}{\delta} \right] \rightarrow \delta \left(\frac{u}{\delta} - \left[\frac{u}{\delta} \right] \right)$

$Ry = [0, +\delta)$

$$>) y = [2m] - 2m \quad R_y = (-1, 0] \quad (2)$$

$$\text{الف) } y = 2\sin m + 2\cos m$$

$$\begin{matrix} 4 \\ 4 \rightarrow 16 \end{matrix}$$

$$-\sqrt{16} \leq 2\sin m + 2\cos m \leq +\sqrt{16} \quad R_y = [-4, 4] \quad (4)$$

$$\text{ب) } y = 4\sin m - 2\cos m$$

$$16 + 4 \rightarrow 20$$

$$-\sqrt{20} \leq 4\sin m - 2\cos m \leq \sqrt{20} \quad R_y = [-\sqrt{20}, \sqrt{20}]$$

$$\text{ج) } y = [2\sin m + 2\cos m]$$

$$4 + 4 = 16$$

$$-\sqrt{16} \leq 2\sin m + 2\cos m \leq \sqrt{16}$$

$$\hookrightarrow R_y = \{y \mid y \in \mathbb{Z}, -4 \leq y \leq 4\}$$

$$>) y = \sqrt{\cos m - 2\sin m}$$

$$1 + 4 \rightarrow 5$$

$$-\sqrt{5} \leq \cos m - 2\sin m \leq +\sqrt{5} \rightarrow \sqrt{[-\sqrt{5}, +\sqrt{5}]}$$

$$\hookrightarrow R_y = [0, +\sqrt{5}]$$

$$\text{د) } y = \sin 2m + 2\sin m + 2$$

$$\frac{-b}{2a} \Rightarrow -\frac{2}{2} \rightarrow y = -\frac{1}{2} \cdot 0 \cdot 0$$

$$m = -1 \rightarrow y = 0$$

$$m = 1 \rightarrow y = 4$$

$$R_y = [0, 4]$$

$$ب) y = r \sin^2 \theta + r \sin \theta + r$$

(V)

$$-\frac{b}{2a} = -\frac{r}{2} \rightarrow y = \frac{r}{2}$$

$$n=2 \rightarrow y=1 \quad R_y = [\frac{r}{2}, r]$$

$$n=1 \rightarrow y=r$$

$$ج) y = \sin^2 \theta + r \cos^2 \theta$$

(A)

$$\underbrace{\sin^2 \theta + \cos^2 \theta}_1 + \frac{r \cos^2 \theta}{1}$$

$$0 \leq \cos^2 \theta \leq 1$$

$$\cdot r \Rightarrow 0 \leq r \cos^2 \theta \leq r$$

$$+1 \Rightarrow 1 \leq r \cos^2 \theta + 1 \leq r+1 \rightarrow R_y = [1, r+1]$$

$$ب) y = \frac{r \cos \theta}{1 + \cos^2 \theta}$$

$$\frac{r \cos \theta}{\frac{1}{\sin^2 \theta}} = \frac{r \cos \theta \sin^2 \theta}{\sin^2 \theta}$$

$$\frac{r \cos \theta \sin^2 \theta}{\sin^2 \theta}$$

$$R_y = [-1, 1]$$

$$\sin^2 \theta \leq r \cos \theta \sin^2 \theta$$

$$د) y = \sin^4 \theta + \cos^4 \theta$$

(A)

$$r^{1-r} \leq \sin^4 \theta + \cos^4 \theta \leq 1 \quad \frac{1}{2} \leq \sin^4 \theta + \cos^4 \theta \leq 1$$

$$R_y = [\frac{1}{2}, 1]$$

ب) $y = [\sin^n x + \cos^n x]$

(9)

$$1 - \varepsilon \leq \sin^n x + \cos^n x \leq 1 \quad R_y = [0, 1]$$

$$\frac{1}{\lambda} \leq \sin^n x + \cos^n x \leq 1 \quad \text{نویز برآورد}$$

5 $\frac{1}{\lambda} \leftarrow \text{دعا بر این است} \quad [\frac{1}{\lambda}] \rightarrow 0 \quad [1] \rightarrow 1$

این) $y = \frac{2n^2 + n - 1}{n + 1}$

10 $\frac{(n+1)(2n-1)}{(n+1)} \Rightarrow (2n-1)$

$n \neq -1 \rightarrow y \neq -9$

$R_y \Rightarrow R - \{-9\}$

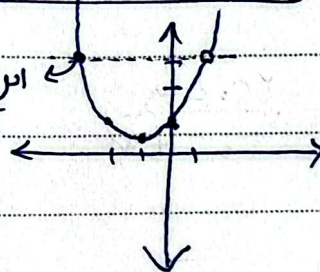
ب) $\frac{n^2 - 1}{n - 1} \rightarrow \frac{(n-1)(n+1)}{(n-1)}$

$n \neq 1 \quad y \neq 2$

$n^2 + n + 1$
 $[\frac{4}{3}, +\infty)$

$R_y = [\frac{4}{3}, +\infty)$

این نقطه را قرار ده



(5)