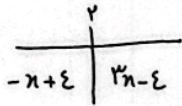
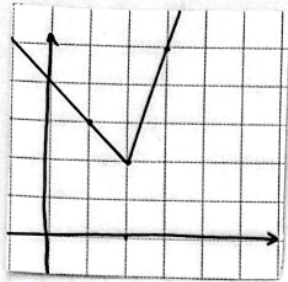


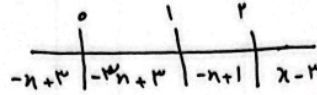
الف) $y = x + |x - 4|$



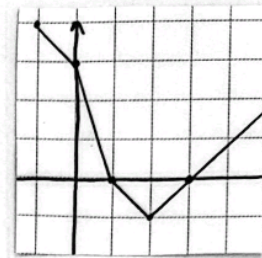
$Ry = [2, +\infty)$



ب) $|x - 2| + |x - 1| - |x|$

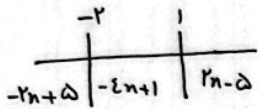


$Ry = [-1, +\infty)$



۵

$|x - 3| - |x + 2| = k$



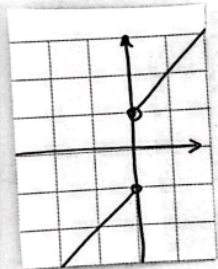
$\rightarrow x = 1 \rightarrow |3 - 3| - |1 + 2| = -3 = k$

مختار این سوال صفحه سوم فایل است.

۵

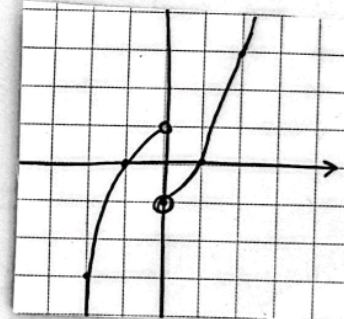
الف) $y = x + \frac{x}{|x|}$

$\begin{cases} x+1 & , x > 0 \\ x-1 & , x < 0 \end{cases}$



ب) $y = x|x| - \frac{x}{|x|}$

$\begin{cases} x^2 - 1, & x > 0 \\ -x^2 + 1, & x < 0 \end{cases}$



۵

الف) $y = [x] - 2x$

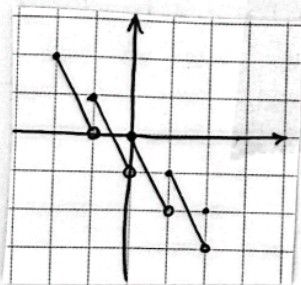
$D_y = \{x\} \rightarrow -2$

$D_y = [1, 2) \rightarrow -2x + 1$

$D_y = [0, 1) \rightarrow -2x$

$D_y = [-1, 0) \rightarrow -2x - 1$

$D_y = [x_2, -1) \rightarrow -2x - 2$



ب) $[x] |x|$

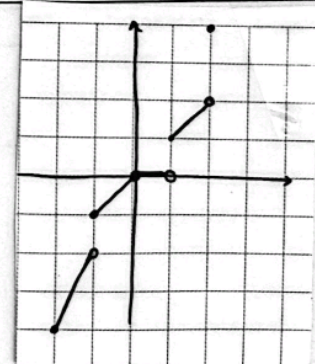
$D_y = \{x\} \rightarrow x$

$D_y = [1, 2) \rightarrow x$

$D_y = [0, 1) \rightarrow 0$

$D_y = [-1, 0) \rightarrow x$

$D_y = [x_2, -1) \rightarrow x$



۵

الف) $y = x - [x] \rightarrow 0 \leq x - [x] < 1 \rightarrow Ry = [0, 1)$

ب) $y = x - f[x] \rightarrow 0 \leq x - [x] < 1 \rightarrow 0 \leq f(x - [x]) < 1 \rightarrow Ry = [0, 1)$

ج) $y = x - 2\left[\frac{x}{2}\right] \rightarrow 2\left(\frac{x}{2} - \left[\frac{x}{2}\right]\right) \rightarrow Ry = [0, 2)$

$[0, 1)$

د) $y = [x] - x \rightarrow 0 \leq [x] - x < 1 \xrightarrow{x-1} [x] - [x] > -1 \rightarrow Ry = (-1, 0]$

۵

۵

$$\text{الف) } y = 3 \sin n + 4 \cos n \rightarrow -\sqrt{9+16} \leq 3 \sin n + 4 \cos n \leq \sqrt{9+16} \rightarrow R_y = [-5, 5]$$

$$\text{ب) } y = 5 \sin n - 3 \cos n \rightarrow -\sqrt{25+9} \leq 5 \sin n - 3 \cos n \leq \sqrt{25+9} \rightarrow R_y = [-\sqrt{34}, \sqrt{34}]$$

$$\text{ج) } y = [2 \sin n + 3 \cos n] \rightarrow -\sqrt{13} \leq 2 \sin n + 3 \cos n \leq \sqrt{13} \rightarrow [-\sqrt{13} \leq y \leq \sqrt{13}] \rightarrow R_y = \{n | n \in \mathbb{Z}, -\sqrt{13} \leq y \leq \sqrt{13}\}$$

$$\text{د) } y = \sqrt{\cos n - 2 \sin n} \rightarrow -\sqrt{5} \leq \cos n - 2 \sin n \leq \sqrt{5} \rightarrow \sqrt{[-\sqrt{5}, \sqrt{5}]} \rightarrow R_y = [0, \sqrt{5}]$$

$$y = \sin^2 n + 3 \sin n + 1$$

$$\frac{-b}{2a} = \frac{-3}{2} = -\frac{3}{2} \rightarrow y = -\frac{3}{2} \text{ min}$$

$$\sin n = 1 \rightarrow y \text{ max}$$

$$\sin n = -1 \rightarrow y = 0$$

$$R_y = [-\frac{3}{2}, 4]$$

$$y = 2 \sin^2 n + 3 \sin n + 1$$

$$\frac{-b}{2a} = \frac{-3}{2} \rightarrow y = \frac{V}{\lambda} \rightarrow \text{min}$$

$$\sin n = 1 \rightarrow V \rightarrow \text{max}$$

$$\sin n = -1 \rightarrow 1$$

$$R_y = [\frac{V}{\lambda}, V]$$

$$y = \sin^2 n + 4 \cos^2 n \xrightarrow{[0, \pi]} [1, 5]$$

$$1 - \cos^2 n + 4 \cos^2 n \rightarrow 3 \cos^2 n + 1 \xrightarrow{[0, 1]}$$

$$R_y = [1, 5]$$

$$y = \frac{r \cot n}{1 + \cot^2 n}$$

$$\frac{r \cos}{\sin} \times \sin^2 = r \sin \cos = \sin^2 n \rightarrow R_y = [-1, 1]$$

$$\text{الف) } y = \sin^2 n + \cos^2 n \rightarrow r^{1-k} \leq \sin^2 n + \cos^2 n \leq 1 \rightarrow r^{1-r} \leq \sin^2 n + \cos^2 n \leq 1 \rightarrow$$

$$r^{-r} \leq \sin^2 n + \cos^2 n \leq 1 \rightarrow R_y = [\frac{1}{2}, 1]$$

$$\text{ب) } y = [\sin^2 n + \cos^2 n] \rightarrow [\frac{1-r}{r} \leq \sin^2 n + \cos^2 n \leq 1] \rightarrow [\frac{1}{\lambda} \leq \sin^2 n + \cos^2 n \leq 1] \rightarrow R_y = \{0, 1\}$$

$$\text{الف) } y = \frac{r n^2 + 4n - 4}{n+2} \rightarrow \frac{(n-1)(n+2)}{n+2} \rightarrow r_{n-1} \rightarrow R_y = \mathbb{R} - \{-9\}$$

$$\text{ب) } \frac{n^2-1}{n-1} = y \rightarrow \frac{(n^2+n+1)(n-1)}{n-1} = n^2+n+1 \rightarrow R_y = [\frac{r}{2}, +\infty)$$

