

Subject:

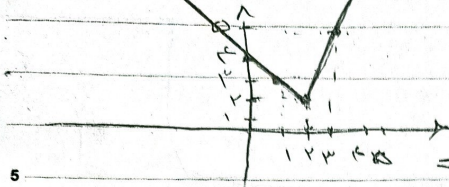
Year: Month: Day: (.)

سأره:

تأليف نوره كيسان page: ()

11,0

الف) $y = x + |2x - 4| \rightarrow$



$x > 2 : 3x - 4$ (5) ①

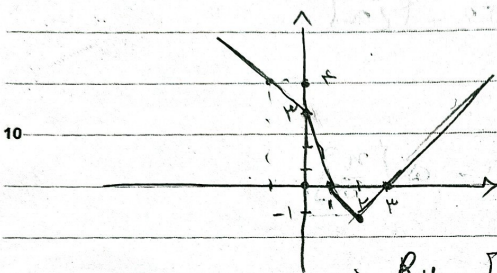
$x = 2 : x$

$x < 2 : -x + 4$

$x = 3 \rightarrow y = 5 \quad x = 0 \rightarrow y = 4$

$x = 1 \rightarrow y = 3$

ب) $y = |x - 2| + |x - 1| - |x|$



$x \leq 0 : -x + 3$

$0 < x \leq 1 : -2x + 3$

$1 < x \leq 2 : -x + 1$

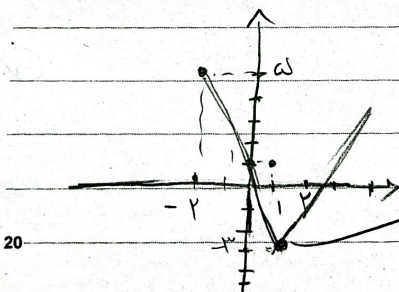
$x > 2 : x - 3$

$x = 0 \rightarrow y = 3, x = 1 \rightarrow y = 0$

$x = 2 \rightarrow y = -1, x = 3 \rightarrow y = 0$

$x = 0 \rightarrow y = 3$

15 $|3x - 4| - |x + 2| = k$



$\Rightarrow k = -3$

$x > 1 : 2x - 1$

$x \leq 1 : -4x + 1$ (5) ②

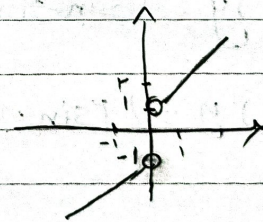
$x \leq -2 : -2x + 1$

الف) $y = x + \frac{x}{|x|} \rightarrow$

$x > 0 : x + 1$

$x < 0 : x - 1$

$x = 0 : 0, 0$

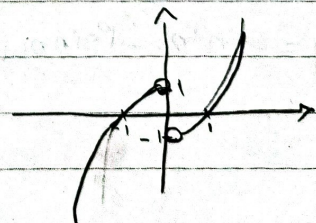


ب) $y = x|x| - \frac{x}{|x|} \rightarrow$

$x > 0 : x^2 - 1$

$x < 0 : -x^2 + 1$

$x = 0 : 0, 0$

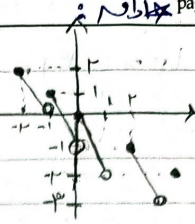


Subject:

Year: Month: Day: ()

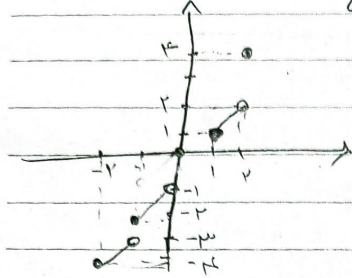
Page: ()

و) $y = \lfloor x \rfloor - 2x \xrightarrow{\text{بجای } x \in [0, 1]}$



(5) ④

ب) $y = \lfloor x \rfloor |x| \xrightarrow{\text{بجای } x \in [0, 1]}$



و) $y = \lfloor x \rfloor - \lfloor 2x \rfloor \Rightarrow R_y = [0, 1)$

ب) $y = \lfloor x \rfloor - \lfloor 2x \rfloor \Rightarrow y = \lfloor x - 2x \rfloor \Rightarrow R_y = \lfloor x \rfloor [0, 1) \Rightarrow R_y = [0, 1)$

ج) $y = x - \omega \lfloor \frac{x}{\omega} \rfloor \Rightarrow y = \omega (\frac{x}{\omega} - \lfloor \frac{x}{\omega} \rfloor) \Rightarrow R_y = \omega \times [0, 1) \Rightarrow R_y = [0, \omega)$

د) $y = \lfloor 2x \rfloor - 2x \Rightarrow y = \lfloor 2x - 2x \rfloor \Rightarrow R_y = [0, 1) \Rightarrow R_y = [-1, 0]$

و) $y = \frac{a}{b} \sin x + \frac{b}{a} \cos x \xrightarrow{\text{بجای } x \in [0, 2\pi]} -\sqrt{a+b} \leq a \sin x + b \cos x \leq \sqrt{a+b}$

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

ب) $y = \frac{a}{b} \sin x + \frac{b}{a} \cos x \Rightarrow \sqrt{a+b} = a \Rightarrow R_y = [-a, a]$

ج) $y = \lfloor \frac{a}{b} \sin x + \frac{b}{a} \cos x \rfloor \Rightarrow \sqrt{a+b} = \sqrt{19} \Rightarrow -\sqrt{19} \leq \lfloor \frac{a}{b} \sin x + \frac{b}{a} \cos x \rfloor \leq \sqrt{19}$

$\Rightarrow R_y = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

و) $y = \sin^2 x + \cos^2 x + 1 \rightarrow \max \rightarrow \sin^2 x + \cos^2 x = 1$

$\min \rightarrow \sin^2 x + \cos^2 x = 0 \Rightarrow y = 0 \Rightarrow R_y = [-\frac{1}{k}, 4]$

$\frac{-b}{Pa} \rightarrow \sin^2 x = \frac{-1}{k} \Rightarrow y = \frac{-1}{k}$

د) $y = \sqrt{\cos x - \sin x} \rightarrow \sqrt{a+b} = \sqrt{a} \Rightarrow$

$0 \leq \sqrt{\cos x - \sin x} \leq \sqrt{a} \Rightarrow R_y = [0, \sqrt{a}]$

Subject:

Year: Month: Day: ()

page: ()

الف) $y = \sin^2 n + r \cos^2 n \Rightarrow y = 1 + r \cos^2 n \Rightarrow 0 \leq \cos^2 n \leq 1$ ①
 $\hookrightarrow 1 - \cos^2 n$
 $\Rightarrow 1 \leq 1 + r \cos^2 n \leq r \rightarrow Ry \in [1, r]$ 5

ب) $y = \frac{r \cos n}{1 + \cos n} \Rightarrow y = \frac{r \cos n}{\cos n + \sin^2 n + 1} = r \sin n \cos n = \sin^2 n \Rightarrow$
 $-1 \leq \sin n \leq 1 \Rightarrow -1 \leq \sin^2 n \leq 1 \rightarrow Ry \in [-1, 1]$

10

ج) $y = r \sin^2 n + r \sin n + r \rightarrow \max \rightarrow n = 1 \rightarrow y = v$ ⑤
 $\min \rightarrow n = -1 \rightarrow y = 1$
 $Ry = \left[+\frac{v}{\lambda}, v \right]$
 $-\frac{b}{ka} \rightarrow n = -\frac{r}{f} \rightarrow y = \frac{v}{\lambda}$

15

④

$$\text{ii) } y = \sin^4 n + \cos^4 n \rightarrow \frac{1-k}{1} \leq \sin^4 n + \cos^4 n \leq 1$$

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

20

⑤

$$\text{b) } y = [\sin^2 n + \cos^2 n] \rightarrow \frac{1-k}{1} \leq \sin^2 n + \cos^2 n \leq 1$$

$$\frac{1}{1} \rightarrow \left[\frac{1}{1} \right] \text{ so.}$$

$$\Rightarrow R_y = \{0, 1\}$$

① ⑩

$$\text{ii) } y = \frac{n^2 + (n-1)}{n+1} \xrightarrow{\times \frac{1}{n}} \frac{(n+1)(n-1)}{n+1} \rightarrow \frac{(n+1)(n-1)}{n+1} \rightarrow n-1 \Rightarrow y \neq -1, 0$$

$$y+1 = 1 \Rightarrow n = \frac{y+1}{1} \Rightarrow R_y = \mathbb{R} - \left\{ -1, 0 \right\}$$

③

$$y = \frac{(n-1)(n^2+1+n)}{(n-1)} \rightarrow n \neq 1 \Rightarrow y \neq k$$

30

$$y = n^2 + n + 1 \rightarrow n^2 + n \leq 1 - y \Rightarrow n(n+1) \leq 1 - y \rightarrow \text{C.O.V. } y \leq \frac{k}{k}$$

P4YCO

$$\Rightarrow R_y = \left[\frac{k}{k}, +\infty \right) - \left\{ k \right\}$$

