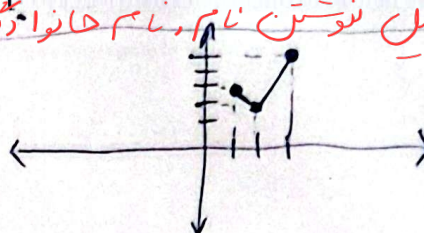


به دلیل نوشتن نام، نام خانوادگی نفره شده (0) هر با نشانه

الف) 18, 20

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

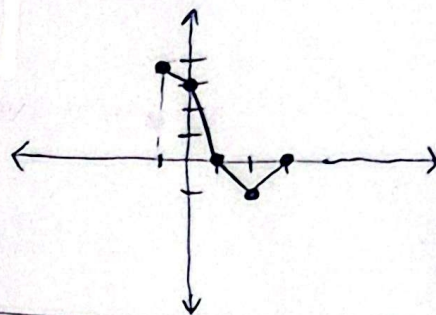
$$R_f = [2, +\infty)$$



ب)

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

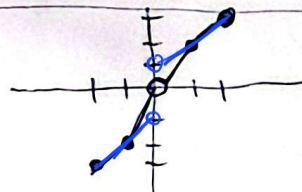
$$R_f = [-1, +\infty)$$



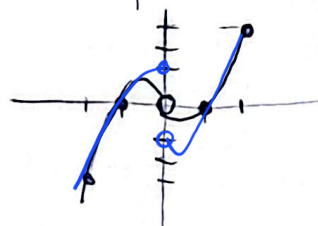
$$\begin{aligned} |3x-2| &\leq k+|x+2| \xrightarrow{\text{مقدار مثبت}} 9x^2+4-12x = k^2+x^2+k+kx+2kx+k \\ 8x^2+x(-2k-22)-(k^2+k-5) &= 0 \xrightarrow{\Delta \geq 0} 4k^2+5k+11 \leq 0 \rightarrow (3k+4)^2 = 0 \\ z > 4k^2+22k+32 &= 0 \xrightarrow{\text{ساده شود}} 4k^2+5k+11 = 0 \rightarrow (3k+4)^2 = 0 \end{aligned}$$

$$k = -3$$

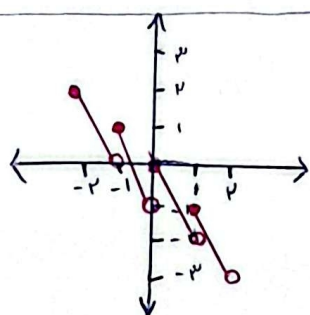
$$\begin{array}{l} \text{الف) } x > 0 \quad x+1 \quad \begin{bmatrix} 1 \\ 2 \end{bmatrix} \quad \begin{bmatrix} 2 \\ 3 \end{bmatrix} \\ x < 0 \quad x-1 \quad \begin{bmatrix} -1 \\ -2 \end{bmatrix} \quad \begin{bmatrix} -2 \\ -3 \end{bmatrix} \end{array}$$



$$\begin{array}{l} \text{ب) } x > 0 \quad x^2-1 \quad \begin{bmatrix} 1 \\ 0 \end{bmatrix} \quad \begin{bmatrix} 2 \\ 3 \end{bmatrix} \\ x < 0 \quad -x^2+1 \quad \begin{bmatrix} -1 \\ 0 \end{bmatrix} \quad \begin{bmatrix} -2 \\ -3 \end{bmatrix} \end{array}$$



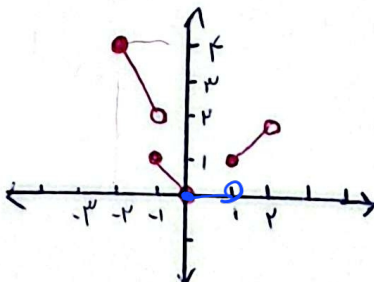
الف)



1, 70

ضایعاتی ها نوشته شود

ب)



الف) $R_f = [0, 1]$

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

ج) $y = \omega \left(\frac{x}{\omega} - \left[\frac{x}{\omega} \right] \right) \rightarrow R_f = [0, \omega]$ د) $R_f = [-1, 0]$

الف) $-\sqrt{13} \leq 3 \sin x + 4 \cos x \leq \sqrt{13} \rightarrow R_f = [-\sqrt{13}, \sqrt{13}]$

ب) $-\sqrt{2\omega} \leq 4 \sin x - 3 \cos x \leq \sqrt{2\omega} \rightarrow R_f = [-\omega, \omega]$

ج) $-\sqrt{29} \leq 4 \sin x + \omega \cos x \leq \sqrt{29} \rightarrow [4 \sin x + \omega \cos x] \rightarrow R_f = \{[-4, \omega] \cap \mathbb{Z}\}$

د) $-\sqrt{\omega} \leq \cos x - 3 \sin x \leq \sqrt{\omega} \rightarrow R_f = [0, \sqrt{\omega}]$

الف) $\sin x \rightarrow 1 \rightarrow y = 4$
 $\rightarrow -1 \rightarrow y = 0$

$R_f = [0, 4]$
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ب) $\sin x \rightarrow 1 \rightarrow y = \sqrt{v}$
 $\rightarrow -1 \rightarrow y = 1$

$R_f = \left[\frac{\sqrt{v}}{1}, \sqrt{v} \right]$

$\rightarrow \frac{-b}{ra} = -\frac{v}{r} \rightarrow y = \frac{v}{1}$

الف) $y = 3 \cos^2 x + 1$

$\cos x \rightarrow 1 \rightarrow y = 4$
 $\rightarrow -1 \rightarrow y = 2$
 $\rightarrow \frac{-b}{ra} = 0 \rightarrow 1$

$R_f = [2, 4]$

ب) $\frac{3 \cos^2 x}{\sin^2 x} \rightarrow y = 3 \sin x \cos x = \sin 2x$
 $R_f = [-1, 1]$

الف) $\frac{1}{r} \leq \sin^4 x + \cos^4 x \leq 1 \rightarrow R_f = \left[\frac{1}{r}, 1 \right]$

ب) $\frac{1}{n} \leq \sin^4 x + \cos^4 x \leq 1 \rightarrow [\sin^4 + \cos^4] \rightarrow 1 \rightarrow 0 \rightarrow R_f = \{0, 1\}$

الف) $\frac{(2x-1)(x+1)}{x+1} = 2x - 1 \xrightarrow{x=-1} -1 - 1 = -2 \quad R_F = \mathbb{R} - \{-2\}$

10

1,0

ب) $\frac{(x-1)(x^2+x+1)}{x-1} = x^2+x+1 \xrightarrow{x=1} 1+1+1=3 \quad R_F = \mathbb{R} - \{3\}$