

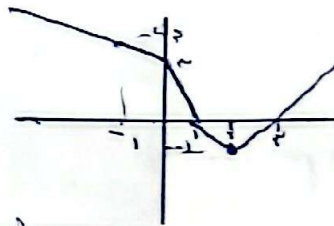
$$-x+3 \quad 3x-4$$



$$R_f = [2, 4]$$

است

$$-x+3 \quad -3x+3 \quad -x+1 \quad x-2$$

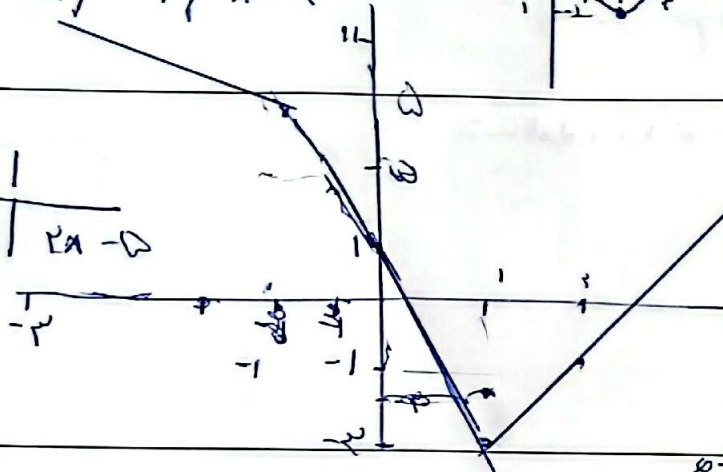


$$R_f = [-1, 1]$$

است

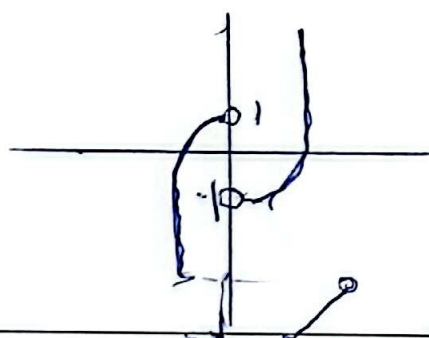
۱

$$\omega-2x \quad 1-2x \quad 2x-5$$

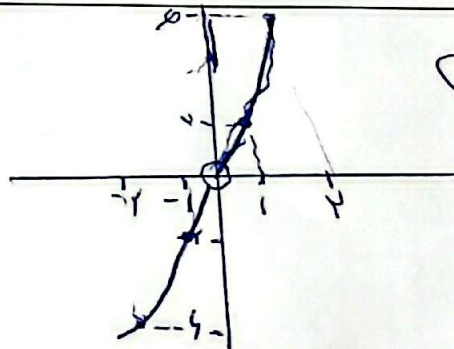


خود را رسم می‌کنی

۲

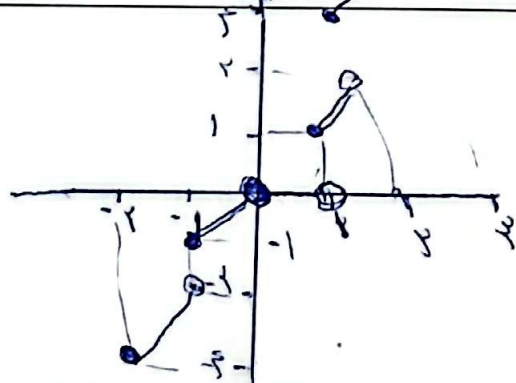


است

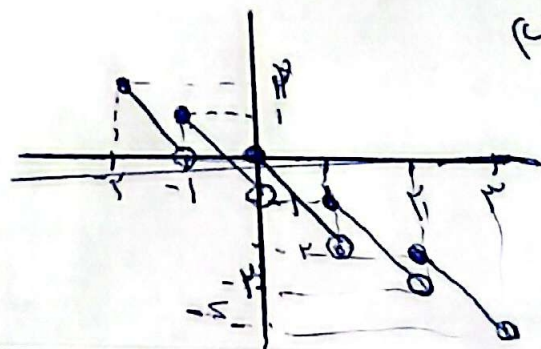


است

۳



است



است

۴

$$R_f = [0, 1]$$

است

$$f(x - [x]) \rightarrow 0 \leq x - [x] < 1 \quad 0 \leq f(x - [x]) < 1 \rightarrow R_f = [0, 1]$$

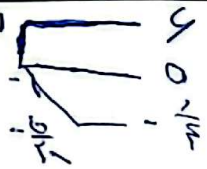
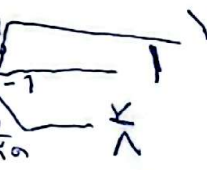
$$\omega\left(\frac{x}{\omega} - \left[\frac{x}{\omega}\right]\right) \rightarrow 0 \leq \frac{x}{\omega} - \left[\frac{x}{\omega}\right] < 1 \quad 0 \leq \omega\left(\frac{x}{\omega} - \left[\frac{x}{\omega}\right]\right) < \omega \rightarrow R_f = [0, \omega]$$

$$R_f = (-1, 0]$$

$$R_f = [0, \omega]$$

$$\omega/[x] - x \quad \text{است}$$

۵

$-\sqrt{r^2+p^2} \leq r \sin x + p \cos x \leq \sqrt{r^2+p^2} \rightarrow -\sqrt{r^2+p^2} \leq y$ (ا) $R_f = [-\sqrt{r^2+p^2}, \sqrt{r^2+p^2}]$ $-\sqrt{1+9} \leq y \leq \sqrt{1+9} \rightarrow R_f = [-\sqrt{10}, \sqrt{10}]$ (ب) $-\sqrt{r^2+p^2} \leq r \sin x + p \cos x \leq \sqrt{r^2+p^2} \rightarrow -\sqrt{r^2+p^2} \leq y$ (2) $-\sqrt{0} \leq \sqrt{0} \cos x - \sqrt{0} \sin x \leq \sqrt{0} \rightarrow 0 \leq \sqrt{0} \cos x - \sqrt{0} \sin x \leq \sqrt{0}$ (3) $R_f = [0, \sqrt{0}]$	6
$\sin^2 x + p \sin x + r$  $\rightarrow R_f = [-\frac{1}{2}, \frac{1}{2}]$ (ا) $r \sin^2 x + p \sin x + r$  $\rightarrow R_f = [-\frac{1}{2}, \frac{1}{2}]$ (ب)	7
$\sin^2 x + \cos^2 x = 1 \rightarrow \sin^2 x = 1 - \cos^2 x \rightarrow y = x^2 - \cos^2 x + 1$ (ا) $p \cos^2 x + 1$  $\rightarrow R_f = [-1, 1]$ (ب) $1 + \cot^2 x = \frac{1}{\sin^2 x}$ $\frac{1}{\sin^2 x} \rightarrow r \sin^2 x$ $R_f = [-1, 1] \rightarrow \sin^2 x$	8
$\frac{1}{2} \leq \sin^2 x + \cos^2 x \leq 1 \rightarrow R_f = [\frac{1}{2}, 1]$ (ا) $\frac{1}{2} \leq \sin^2 x + \cos^2 x \leq 1 \rightarrow [\frac{1}{2}] \leq [\sin^2 x + \cos^2 x] \leq 1$ (ب) $0 \leq [\sin^2 x + \cos^2 x] \leq 1 \rightarrow R_f = [0, 1]$	9
(ا) معادله را به فرم $ax^2 + bx + c = 0$ درآید. $\frac{5x^2}{x^2+y^2} - \frac{11x}{x^2+y^2} + \frac{11}{x^2+y^2} = 0 \rightarrow 5x^2 - 11x + 11 = 0$ $\rightarrow y^2 + 11y + 11 \geq 0 \rightarrow (y+11)^2 \geq 0 \rightarrow y \geq -11 \rightarrow R_f = [-11, \infty)$ (ب) $y = x^2 + x + 1$ صورت فیل و متعین است. $x^2 + x + 1 - y = 0 \rightarrow x = \frac{-1 \pm \sqrt{1-4(1-y)}}{2} = \frac{-1 \pm \sqrt{4y-3}}{2}$ $x = \frac{-1 \pm \sqrt{4y-3}}{2}$ $y \neq \frac{3}{4}$ $x^2 + x + 1 = y$	10