

IV, VA

حل المسألة

مثال $f(x) = P \sin^2(x + \frac{\pi}{2}) - 1 \rightarrow R_{f(x)} = [-1, 1]$ (1) (2)

$\rightarrow \min t = 0 \rightarrow f(x) = P \times 0 - 1 = -1$

$\rightarrow \max t = 1 \rightarrow f(x) = P \times 1 - 1 = 1$

$\rightarrow g(x) = P \cos^2 x - K$

$-1 \leq \cos x \leq 1 \xrightarrow{P \text{ موجبة}} -1 \leq \cos^2 x \leq 1 \xrightarrow{\times P} -P \leq P \cos^2 x \leq P$

$\xrightarrow{-K} \underbrace{-P - K}_{-V} \leq P \cos^2 x - K \leq \underbrace{P - K}_{-1}$

$R_{g(x)} = [-V, -1]$

$y = \frac{x}{|x|} + [a]$

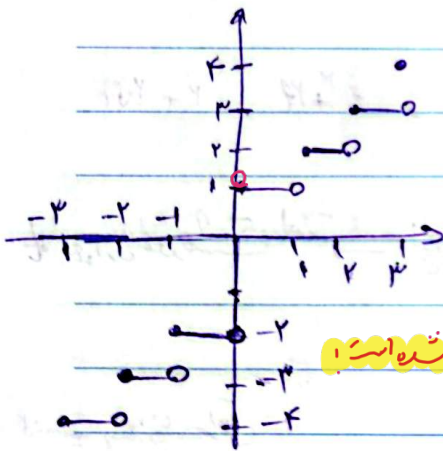
$D = [-P, P]$

$y = 1 + P = P \quad x = P$

$y = \frac{x}{x} + P = P \quad P \leq x < P$

$y = \frac{x}{x} + 1 = P \quad 1 \leq x < P$

$y = \frac{x}{x} + 0 = 1 \quad 0 \leq x < 1$



صفر تعريف شده است

$y = \frac{x}{x} - 1 = -P \quad 1 \leq x < P$

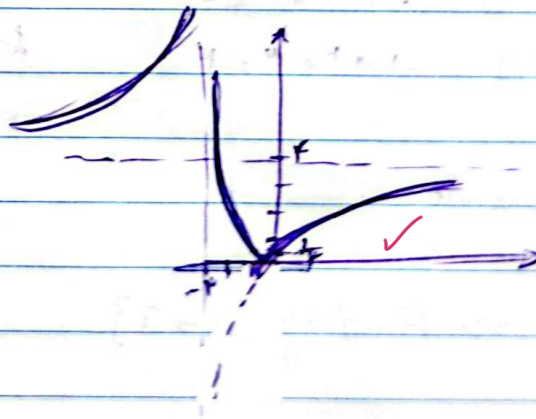
$y = -1 - P = -P \quad P \leq x < -1$

$y = -1 - P = -P \quad -P \leq x < -P$

$y = \frac{|Px + 1|}{x + P}$

$R_f = \mathbb{R} - \{P\}$

$D_f = \mathbb{R} - \{P\}$



جواب

$$|x-1| + |y-1| = 4$$

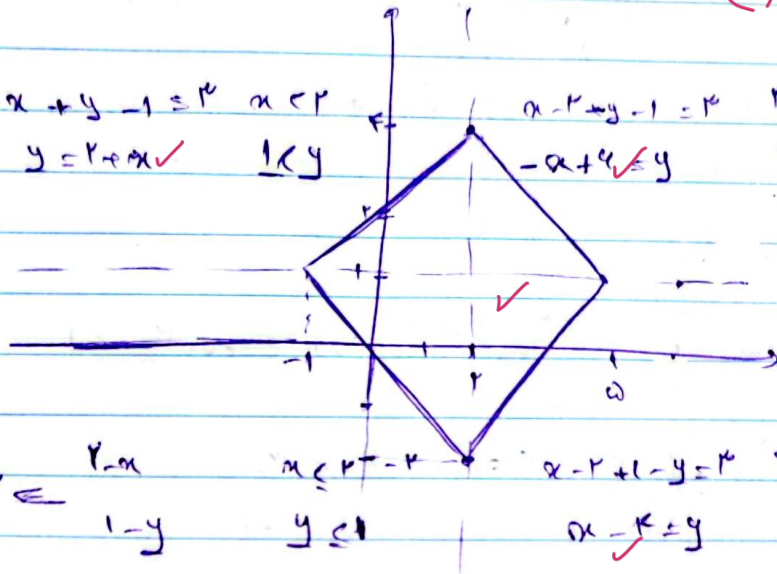
(2) (F)

$$1-x+y-1 \leq 4 \quad x < 1$$

$$y = 1+x \quad 1 < y$$

$$x-1+y-1 = 4 \quad x \leq 1$$

$$-x+1+y = 4 \quad 1 \leq y$$



$$1-x+1-y = 4 \quad x < 1$$

$$y = -x$$

$$1-x$$

$$1-y$$

$$x \leq 1$$

$$y \leq 1$$

$$x-1+1-y = 4 \quad x \leq 1$$

$$x-1=y$$

$$y \leq 1$$

$$f(x) = x + \frac{1}{x} = \sqrt{x + \frac{1}{x}}$$

(1) (D)

$$f(x) = t^2 + \frac{1}{t^2} \rightarrow \min t = \sqrt{1} \rightarrow y = t^2 + \frac{1}{t^2} = 1 + 1 = 2$$

$$\rightarrow \max t = +\infty$$

$$\rightarrow \frac{-b}{2a} = \frac{-1}{1} = -1 \quad \text{نقطة} \rightarrow \text{نقطة} \rightarrow \text{نقطة}$$

$$R_{f(x)} = [2, +\infty)$$

$$y = (1 - \sin x)(1 + \sin x) = 1 - \sin^2 x = \cos^2 x$$

$$\sin x = -1 \rightarrow y = -1 - 1 + 1 = -1$$

$$\sin x = 1 \rightarrow y = -1 + 1 + 1 = 1$$

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

$$f(x) = -\frac{1}{x} + 10$$

(2) (4)

$$P = \{1, 5, \dots, 9\}$$

جواب

$$f(x) = -\frac{1}{x} + 10$$

$$x=1 \rightarrow y = -\frac{1}{1} + 10$$

$$x=2 \rightarrow y = -\frac{1}{2} + 10$$

$$x=3 \rightarrow y = -\frac{1}{3} + 10$$

⋮

+

$$x=9 \rightarrow y = -\frac{1}{9} + 10$$

$$y = \left(-\frac{1}{1} - \frac{1}{2} - \frac{1}{3} \dots - \frac{1}{9}\right) + \frac{9 \times 10}{9} \rightarrow -\frac{10}{9} + 10 = 9\frac{8}{9}$$

$$y = \sqrt{ax^2 + bx + c}$$

$$[r, +\infty)$$

$$f(x) = 1$$

2

1

$$g(x) = \sqrt{bx^2 + ax - r}$$

$$bx^2 + ax - r = ax^2 + bx + c \rightarrow a=0 \rightarrow bx + c$$

$$x=1 \rightarrow y^1 = 1b + c \rightarrow 1b + c = 1$$

بما أن:

$$x=1 \rightarrow y^0 = 1b + c \rightarrow c = -1b$$

$$c = -1$$

$$\left. \begin{array}{l} 1b + c = 1 \\ 1b - 1b = 1 \end{array} \right\} \rightarrow b = 1$$

$$g(x) = \sqrt{x^2 + 1} \rightarrow Rg(x) = [1, +\infty)$$

min = 1

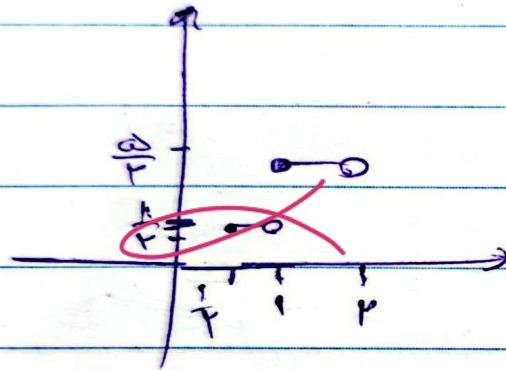
max = +∞

عدد غیر صحیح از برابری خارج نمی شود!!

حلیا صفر را ال

$$y = [x] + [x] + \left(\frac{1}{2}\right) \rightarrow y = 2[x] + \frac{1}{2}$$

$$D_f = \left[\frac{1}{2}, 2\right) \quad (10)$$



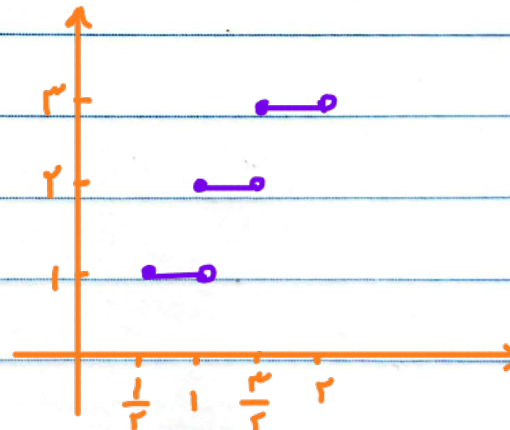
$$y = 2x_0 + \frac{1}{2} = \frac{1}{2} \quad \frac{1}{2} \leq x < 1$$

بازه ها 1/2 هستند!

$$y = 2x_1 + \frac{1}{2} = \frac{3}{2} \quad 1 \leq x < 2$$

بازه ها 1/2 هستند!

$$y = \begin{cases} \frac{1}{2} \leq x < 1 \rightarrow y = 0 + 1 = 1 \\ 1 \leq x < \frac{3}{2} \rightarrow y = 1 + 1 = 2 \\ \frac{3}{2} \leq x < 2 \rightarrow y = 1 + 2 = 3 \end{cases}$$



سه بازه حفظ