

المجال

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

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

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

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

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

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

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

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

$$D = [-P, P] \quad (2)$$

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

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

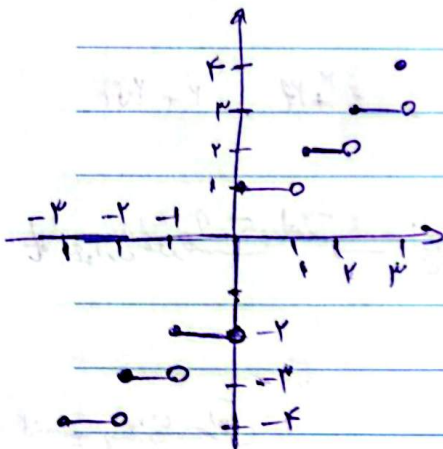
$$y = \frac{x}{x} + 1 = P \quad 1 \leq x < P$$

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

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

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

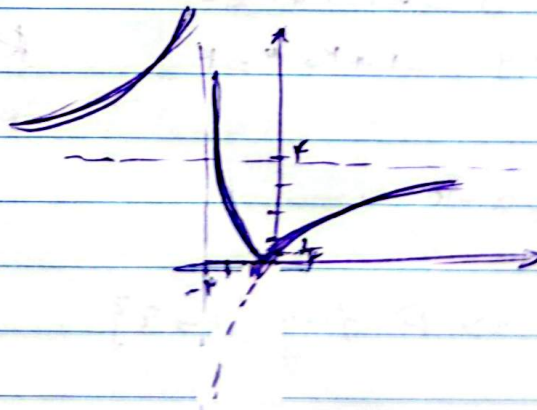
$$y = -1 - P = -P \quad -P \leq x < -P$$



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

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

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



جواب

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

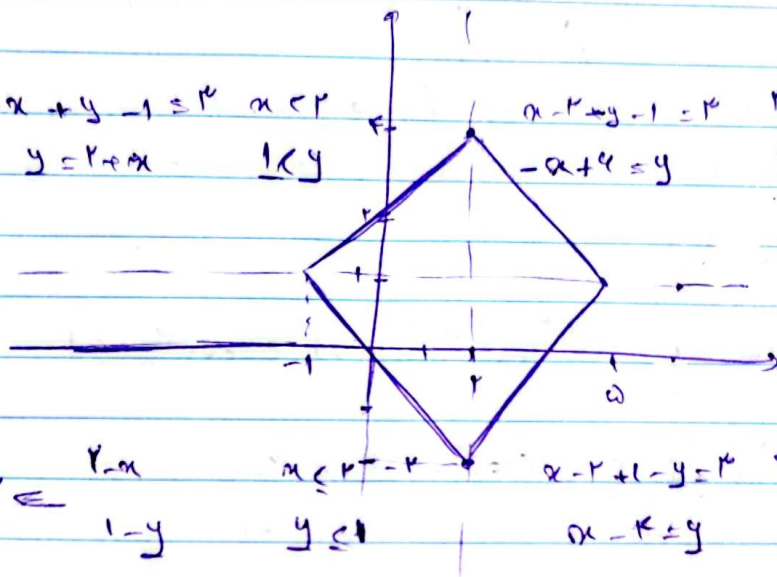
(F)

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

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

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

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



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

$$y = -x$$

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

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

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

(G)

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

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

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

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

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

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

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

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

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

(H)

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

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)

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

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

$$x=r \rightarrow y^2 = rb + c \rightarrow rb + c = 1$$

بما أن:

$$x=r \rightarrow y^2 = rb + c \rightarrow c = -rb$$

$$c = -r$$

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

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

→ min =

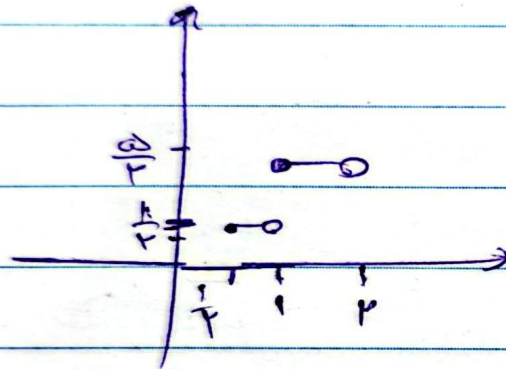
→ max = +∞

$$f_{\text{con}} = \frac{n^{\text{th}} - Kx}{x + P}$$

حل المسألة

$$y = [x] + [x] + \frac{1}{p} \rightarrow y = 2[x] + \frac{1}{p}$$

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



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

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

الخطوة التالية