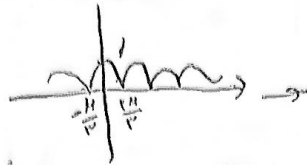


B دوازدهم سر

$$f(x) = 2 \sin\left(x + \frac{\pi}{3}\right) - 1$$

$$f(x) = 2 \cos\left(x\right) - 1$$



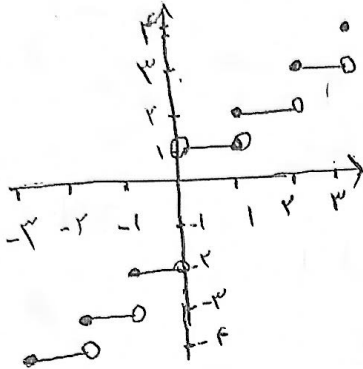
$$R_f = \begin{bmatrix} 1 & 1 \end{bmatrix}$$

$$R_f = \begin{bmatrix} -1 & -1 \end{bmatrix}$$

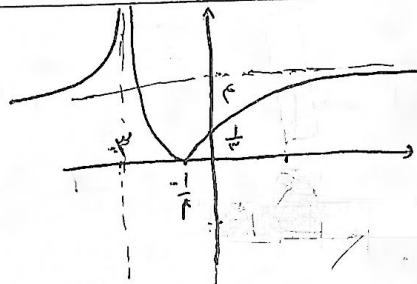
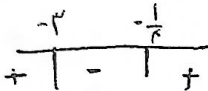
$$\frac{x}{|x|} + [a]$$

$$x > 0 \Rightarrow 1 + [a]$$

$$x < 0 \Rightarrow -1 + [a]$$



$$y = \left| \frac{x+1}{x+2} \right|$$



$$|x-2| + |y-1| = 3$$

$$\frac{x}{-1} - \frac{y}{-1}$$

$$x - y = 3$$

$$y = x - 3$$

$$\frac{x}{1} + \frac{y}{1}$$

$$x + y = 3$$

$$y = 3 - x$$

$$\frac{x}{-1} - \frac{y}{1}$$

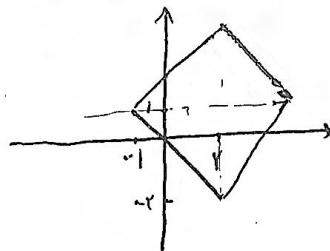
$$x - y = 3$$

$$y = x - 3$$

$$\frac{x}{1} - \frac{y}{-1}$$

$$x + y = 3$$

$$y = 3 - x$$



$$f(x) = x + \frac{1}{x} + 2\sqrt{x + \frac{1}{x}}$$

$$x > 0 \Rightarrow \min\left(x + \frac{1}{x}\right) = 2$$

$$x + 2\sqrt{x}$$

$$R_f = \begin{bmatrix} x + 2\sqrt{x} & +\infty \end{bmatrix}$$

$$f(x) = (x - \sin x)(1 + \sin x)$$

$$- \sin^2 x + x \sin x + \sin x \Rightarrow \begin{bmatrix} \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ \min \end{bmatrix}$$

$$-1 + x + 1 = x$$

$$-1 + x + 1 = x$$

$$-1 - x + 1 = -x$$

$$R_f = \begin{bmatrix} 0 & 1 \end{bmatrix}$$

$$f(x) = -\frac{1}{x^2}x + 10$$

$$x \in \mathbb{N}, x < 10$$

$$\left\{ \frac{1}{1^2}, \frac{1}{2^2}, \frac{1}{3^2}, \dots, \frac{1}{n^2} \right\} \Rightarrow \sum \frac{(1+2+\dots+n)}{n^2} = \frac{1}{2} \sqrt{n}$$

$$ax^2 + bx + c$$

$$\Rightarrow 8a + 12b + c = 0$$

$$9a + 13b + c = 1$$

$$a + b = 1$$

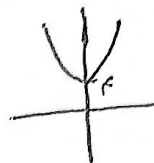
$$b = 1$$

$$c = -2$$

$$a = 0$$

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جواب است

$$\sqrt{x^2 + 1}$$



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

$$f(x) = \frac{x^2 - 4}{x + 2}$$

$$a, b = -2$$

$$f\left(\frac{-c}{-a}\right) = f(2) = 0$$

$$\downarrow \frac{x(x-2)(x+2)}{(x+2)} = x^2 - 2x$$



$$[-1, +\infty) - \{1\}$$

$$c = -1$$

$$y = \sqrt{ax^2 + bx + c} \Rightarrow \sqrt{ax^2 + bx + c} = 0 \Rightarrow ax^2 + bx + c = 0$$

$$\begin{aligned} \sqrt{a^2 + ab + b^2} &= 0 \\ \sqrt{a^2 + ab + b^2} &= 0 \\ \sqrt{a^2 + ab + b^2} &= 0 \end{aligned}$$

$$\sqrt{a^2 + ab + b^2} = 0 \Rightarrow a^2 + ab + b^2 = 0$$

$$y = \sqrt{a^2 + ab + b^2}$$

$$\Rightarrow \sqrt{(a-b)^2} \Rightarrow \sqrt{a^2 - 2ab + b^2} = 0$$

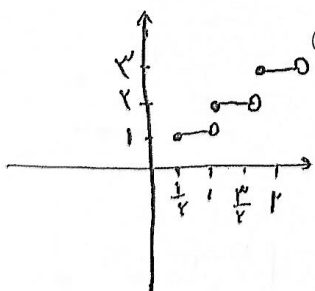
$$a = -4$$

$$b = 12$$

$$D_f = [-4, 12]$$

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

$$[a] + [a, \frac{1}{a}]$$



$$x \in \mathbb{N}$$