

داریم رفته B

شماره تکلیف ۱

استقره مدارک

$$\sin f(x) = 2 \sin^2 \left(x + \frac{\pi}{4} \right) - 1$$

$$-1 \leq \sin \left(x + \frac{\pi}{4} \right) \leq 1 \rightarrow 0 \leq \sin^2 \left(x + \frac{\pi}{4} \right) \leq 1$$

$$0 \leq 2 \sin^2 \left(x + \frac{\pi}{4} \right) \leq 2 \rightarrow -1 \leq 2 \sin^2 \left(x + \frac{\pi}{4} \right) \leq 1$$

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

$$g(x) = 2 \cos^3 x - 4$$

$$-1 \leq \cos x \leq 1 \rightarrow -1 \leq \cos^3 x \leq 1$$

$$-2 \leq 2 \cos^3 x - 4 \leq -2 \rightarrow -7 \leq 2 \cos^3 x - 4 \leq -1$$

$$R_f = [-7, -1]$$

$$y = \frac{x}{1-x} + [x]$$

$$-2 \leq x < -1 \rightarrow [x] = -2 \rightarrow y = -1 - 2 = -3$$

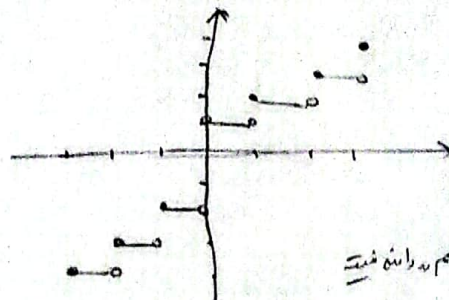
$$-1 \leq x < 0 \rightarrow [x] = -1 \rightarrow y = -1 - 1 = -2$$

$$0 \leq x < 1 \rightarrow [x] = 0 \rightarrow y = 1$$

$$1 \leq x < 2 \rightarrow [x] = 1 \rightarrow y = 1 + 1 = 2$$

$$2 \leq x < 3 \rightarrow [x] = 2 \rightarrow y = 1 + 2 = 3$$

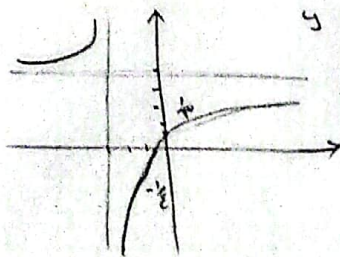
$$x = 3 \rightarrow [x] = 3 \rightarrow y = 1 + 3 = 4$$



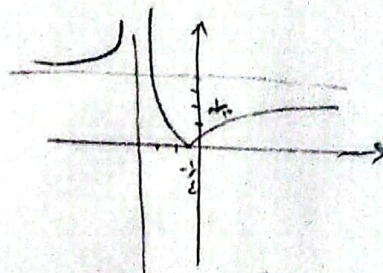
شماره تکلیف ۲

$$y = \left| \frac{x+1}{x+2} \right| \rightarrow \begin{cases} \frac{x+1}{x+2} \geq 0 \\ \frac{x+1}{x+2} < 0 \end{cases}$$

$$y = \frac{x+1}{x+2}$$



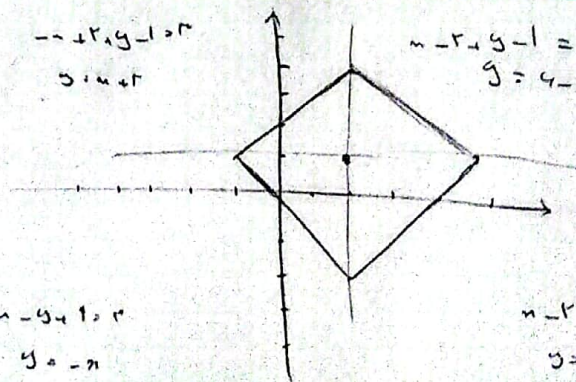
$$y = \left| \frac{x+1}{x+2} \right|$$



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

$$\begin{aligned} -x+2, y-1 &= 3 \\ y &= x+1 \end{aligned}$$

$$\begin{aligned} x-2, y-1 &= 3 \\ y &= 4-x \end{aligned}$$



$$\begin{aligned} x-2, y+1 &= 3 \\ y &= -x \end{aligned}$$

$$\begin{aligned} -x+2, y+1 &= 3 \\ y &= x-2 \end{aligned}$$

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

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

$$x + \frac{1}{x} \geq 2 \rightarrow x \geq 1$$

$$R_f = [2+2\sqrt{2}, +\infty)$$

$$g(x) = (2 - \sin x)(1 + \sin x) \rightarrow$$

$$\begin{aligned} -\sin^2 x + 2 \sin x + 2 &\rightarrow \sin x \\ -1/1, 1/1 &\rightarrow -2/1, 1/1 \\ 0 &\rightarrow 2/1, 1/1 \end{aligned}$$

$$R_f = [1, 2]$$

$$f(x) = \frac{1}{x}x + 1 \Rightarrow D_f = \{1, \dots, 9\}$$

$$-\frac{1}{x} \times 1 + 1 + -\frac{1}{x} \times 2 + 1 + \dots + -\frac{1}{x} \times 9 + 1 = -\frac{1}{x}(1+2+\dots+9) + 9 \times 1$$

$$28 \times -\frac{1}{x} + 9 = \frac{9+1}{x} = 1$$

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$$f(x) = \sqrt{ax^2 + bx + c} \quad D_f = [r_1, +\infty) \quad g(x) = \sqrt{bx^2 + ax - r_2} \Rightarrow$$

$$a > 0 \rightarrow f(x) = \sqrt{bx + c} \Rightarrow \begin{cases} x = r_1 \\ x = r_2 \end{cases} \begin{cases} bx + c = 0 \\ bx + c = 0 \end{cases}$$

$$g(x) = \sqrt{bx^2 + c} \Rightarrow \begin{cases} x = r_1 \\ x = r_2 \end{cases} \begin{cases} bx^2 + c = 0 \\ bx^2 + c = 0 \end{cases}$$

$$R_f = [r_1, +\infty) \Rightarrow R_g = [r_1, +\infty)$$

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

$$f(x) = (-1)^x - 2x - 2 \geq 1 \Rightarrow x^2 - 2x \geq 1 \Rightarrow (x + 2)(x - 2) \geq 1 \Rightarrow R_f = [R - 2, 2]$$

$$R_f = [R - 2, 2] \Rightarrow \int_{-1}^1 \frac{1}{x} \rightarrow R_f = [-1, +\infty) - f(x) \quad f\left(\frac{a+b}{2}\right) = f\left(\frac{-r_2}{r_1 - 1}\right)$$

$$f(-1) = (-1)^{-1} - 2 \times -1 = 1$$

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$$y = \sqrt{ax^2 + bx + c} \Rightarrow y = \sqrt{(x - r_1)^2} \Rightarrow y = \sqrt{(x - r_1)^2 + 1} - 1$$

$$a > 0 \quad D_g = [a, b] \rightarrow P_g = [-9, 14] \quad -9 \leq x \leq 14$$

$$-1 \leq x - 2 \leq +1 \Rightarrow R_f = [-1, 1]$$

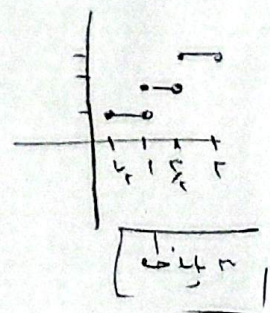
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$$x \in [-1, 1] \Rightarrow \left[-\frac{1}{x}\right]$$

$$\frac{1}{x} \leq x < 1 \Rightarrow 1 \leq x - \frac{1}{x} < \frac{1}{x} \Rightarrow \left[-\frac{1}{x}\right] = 0, \left[x - \frac{1}{x}\right] = 1 \Rightarrow 0 \leq 1$$

$$1 \leq x < \frac{1}{x} \Rightarrow \frac{1}{x} \leq x - \frac{1}{x} < 1 \Rightarrow \left[-\frac{1}{x}\right] = 1, \left[x - \frac{1}{x}\right] = 1 \Rightarrow 1 \leq 1$$

$$\frac{1}{x} \leq x < 2 \Rightarrow 2 \leq x - \frac{1}{x} < \frac{1}{x} \Rightarrow \left[-\frac{1}{x}\right] = 1, \left[x - \frac{1}{x}\right] = 1 \Rightarrow 1 \leq 1$$



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