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المجموع

$$f(x) = \sqrt{5} \sin(x + \pi/\sqrt{5}) - 1 \rightarrow -1 \leq \sin(x + \pi/\sqrt{5}) \leq 1 \xrightarrow{\text{نضرب في } \sqrt{5}} -\sqrt{5} \leq \sqrt{5} \sin(x + \pi/\sqrt{5}) \leq \sqrt{5} \rightarrow -1 \leq f(x) \leq 1$$

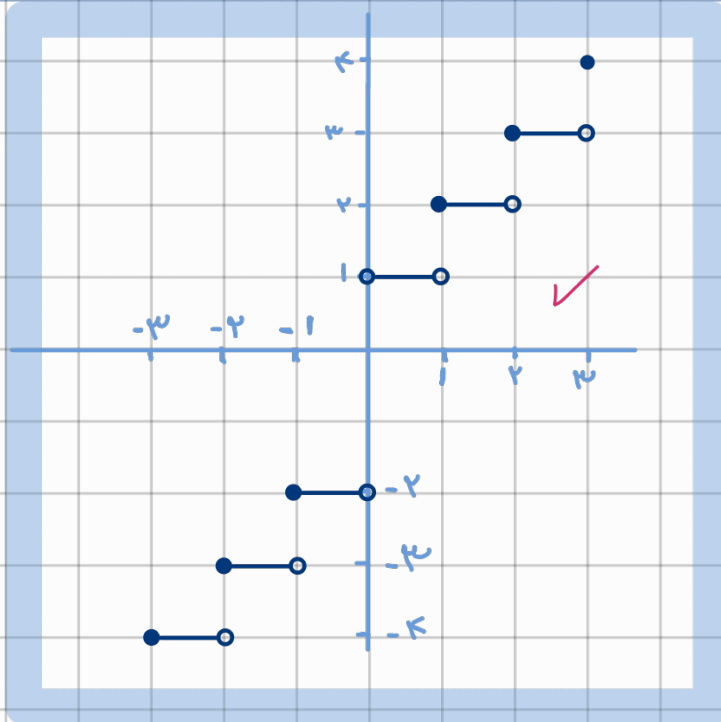
$$\rightarrow 0 \leq \sqrt{5} \sin(x + \pi/\sqrt{5}) \leq \sqrt{5} \rightarrow -1 \leq \sqrt{5} \sin(x + \pi/\sqrt{5}) - 1 \leq 1 \rightarrow -1 \leq f(x) \leq 1$$

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

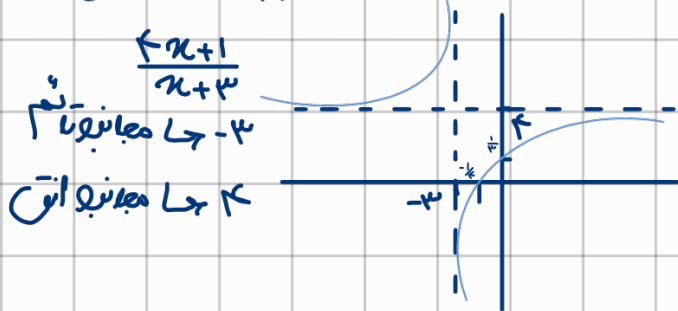
$$g(x) = \sqrt{5} \cos^2 x - 1 \rightarrow -1 \leq \cos^2 x \leq 1 \xrightarrow{\text{نضرب في } \sqrt{5}} -\sqrt{5} \leq \sqrt{5} \cos^2 x \leq \sqrt{5} \rightarrow -1 \leq \sqrt{5} \cos^2 x - 1 \leq 1 \rightarrow -1 \leq g(x) \leq 1$$

$$R_g = [-1, 1]$$

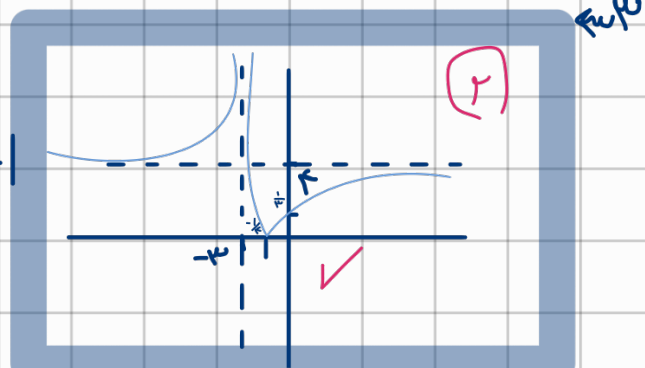
$$y = \frac{x}{|x|} + [x]$$



$$y = \left| \frac{x+1}{x+3} \right| \rightarrow$$



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$$g_k = |x-2| + |y-1| = 3 \Rightarrow$$

$$-x+2+y-1=3 \Rightarrow y = x+2$$

$$\Rightarrow x-2+y-1=3 \Rightarrow y = -x+6$$

$$-x+2-y+1=3 \Rightarrow y = x-2$$

$$\Rightarrow x-2-y+1=3 \Rightarrow y = x-4$$

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

$$\Rightarrow \left(\sqrt{x+\frac{1}{x}}\right)^2 + 2\left(\sqrt{x+\frac{1}{x}}\right) \xrightarrow{x \rightarrow +\infty} +\infty$$

$$x + \frac{1}{x} \xrightarrow{x \rightarrow -1} (\sqrt{x})^2 + 2\sqrt{x} = 2 + 2\sqrt{x}$$

$$\Rightarrow P_f = [2+2\sqrt{x}, +\infty)$$

$$g_k = (3 - \sin x)(1 + \sin x) \Rightarrow -\sin^2 x + 2\sin x + 3$$

$$\Rightarrow P_g = [2, 4]$$

$$f(n) = -\frac{1}{n}n + 10 \quad D_f = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

$$y_{\text{wert}}/g_{\text{wert}} = \left(-\frac{1}{n} \times 1 + 10\right) + \left(-\frac{1}{n} \times 2 + 10\right) + \dots + \left(-\frac{1}{n} \times 9 + 10\right) \Rightarrow$$

$$-\frac{1}{n}(1+2+3+\dots+9) + 10+10+\dots+10 = -\frac{1}{n} \times \frac{9 \times 10}{2} + 9 \times 10 = 90 - 45 = 45$$

$$f(x) = \sqrt{ax^2 + bx + c} \quad \text{mit } D_f = [1, +\infty) \quad \text{mit } f(1) = 0 \text{ und } f'(1) = 0 \quad \text{mit } a = 0 \quad (1) \quad \text{mit } V$$

$$f(x) = \sqrt{bx + c} \quad \text{mit } 0 = \sqrt{1b + c} \quad \text{mit } 0 = 1b + c \quad \text{mit } c = -1b \quad (2)$$

$f(x) = 0 \text{ mit } x = 1 \text{ und } f'(x) = 0 \text{ mit } x = 1$

$$f(x) = 1 \quad \text{mit } 1 = \sqrt{1b - 1b} \quad \text{mit } b = 1 \quad \text{mit } c = -1 \quad (3)$$

$$g(x) = \sqrt{bx^2 + ax - 1c} \quad \text{mit } g(x) = \sqrt{x^2 + 1} \quad \text{mit } \begin{cases} (x \rightarrow +\infty) \rightarrow (+\infty)^2 + 1 = +\infty \\ (x \rightarrow -\infty) \rightarrow (-\infty)^2 + 1 = +\infty \\ (x = 0) \rightarrow 0 + 1 = 1 \end{cases} \quad \text{mit } \left. \begin{array}{l} (1) \\ (2) \\ (3) \end{array} \right\}$$

$$D_{g_1} = \sqrt{[1, +\infty)} \quad \text{mit } D_{g_1} = [1, +\infty)$$

$$f(x) = \frac{x^2 - 1x}{x + 1} = \frac{x(x - 1)}{x + 1} = \frac{x(x - 1)(x + 1)}{x + 1} = x(x - 1) \quad (1) \quad \text{mit } V$$

$\text{mit } x \neq -1 \quad \text{mit } b = 1; c = -1$

$$\text{mit } x(x - 1) \neq 1 \quad \text{mit } x \neq 1 \quad \text{mit } \{a, b\} = \{1, 1\}$$

$$\text{mit } x^2 - 1x \quad \text{mit } x = \frac{-b}{2a} = 1 \quad \text{mit } 1 - 1 = 0 \quad \text{mit } c = -1$$

$$f\left(\frac{a+b}{2c}\right) = f\left(\frac{-1+1}{-1 \times 1}\right) = f(-1) = -1(-1-1) = 2$$

$$g = \sqrt{x^2 + ax + b} - 1 \quad \text{mit } g = \sqrt{(x - 1)^2} \quad \text{mit } g = x - 1$$

$x^2 - 2x + 1 - 1 \quad \text{mit } a = -2, b = 1$

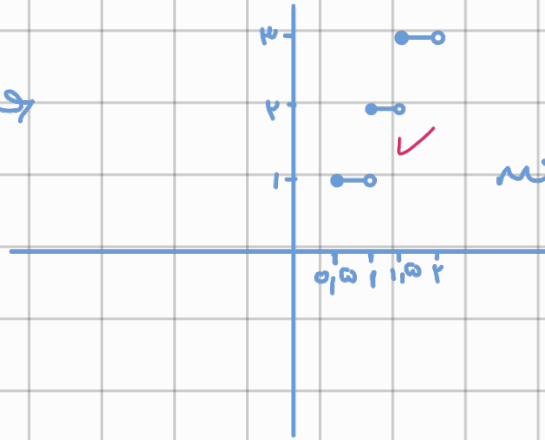
$(1) \quad \text{mit } V$

$$\Rightarrow D_g = [-9, 14] \Rightarrow -9 \leq x \leq 14 \Rightarrow -1 \leq x-2 \leq 10 \Rightarrow -1 \leq g_2 \leq 10 \Rightarrow$$

$$D_g = [-1, 10]$$

$$g_2 = [x] + [x + \frac{1}{4}] \Rightarrow$$

$$\begin{matrix} 1 + 1/4 \\ 1 + 1 \end{matrix}$$



$$\Rightarrow \int_{0,2}^1 g_2(x) dx$$

1/4

1/4