

دوازدهم رنتر سه شنبه ما

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$$f(x) = \begin{cases} 2x-1 & (x) > 1 \rightarrow x > 2 \\ 2x+3 & (x) < 1 \rightarrow x < 2 \end{cases}$$

سوال ←

$$y = \sqrt{f(x) - x + 1} \rightarrow f(x) - x + 1 \geq 0 \begin{cases} x > 2 \rightarrow x > 2 \\ x < 2 \rightarrow \frac{4}{3}x < 2 \end{cases}$$

$$D_f = \left(-\frac{4}{3}, 2\right) \cup [2, +\infty) = \left[-\frac{4}{3}, +\infty\right)$$

$$y = \frac{2x^3 + 3x^2 + 18x + 3}{(2x^2 + (x+1))^2} = \frac{2x^3 + 3x^2 + 18x + 3}{((2x+1)^2)^2}$$

سوال ←

$$\rightarrow \frac{2x^3 + 3x^2 + 18x + 3}{(2x+1)^2} \rightarrow \text{صورت سر بر } x+1 \text{ بخش نپذیرد باشد}$$

$$\begin{array}{r} 2x^3 + 3x^2 + 18x + 3 \quad | \quad 2x+1 \\ -(2x^3 + 4x^2) \\ \hline -x^2 + 18x + 3 \\ -(x^2 + 2x) \\ \hline 16x + 3 \\ -(16x + 8) \\ \hline -5 \end{array} \rightarrow \frac{(2x+1)(3)(2x+1)^2}{(2x+1)^2} \rightarrow \frac{3}{2x+1}$$

$$D_f = R - \left\{ -\frac{1}{2} \right\}$$

$$f(x) = \begin{cases} \frac{x^3 + 2x^2 - x - 2}{x^2 - 1} \\ \frac{ax+b}{x+b} \end{cases}$$

سوال ←

$$\begin{array}{r} x^3 + 2x^2 - x - 2 \quad | \quad x^2 - 1 \\ -(x^3 + x^2) \\ \hline x^2 - x - 2 \\ -(x^2 + 2x) \\ \hline -3x - 2 \\ -(-3x - 3) \\ \hline 1 \end{array}$$

$$x \neq \pm 1 \rightarrow \begin{cases} x \neq 1 \rightarrow \frac{a+b}{1+b} = 3 \rightarrow 3b-a = -1 \\ x = -1 \rightarrow b+a = 1 \end{cases}$$

Scanned with

$$g(x) = x + C \rightarrow x + C = x + 2 \rightarrow C = 2$$

$$g(1) = 3, g(-1) = 1 \quad b + C = 2 + 1 \quad \boxed{2, 1}$$

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

$$\begin{aligned} x-C &= x+1 \\ C &= -1 \end{aligned}$$

$$g(x) = \frac{x^2-1}{x^2+ax+b} = \frac{(x-1)(x+1)}{x^2+ax+b} \leftarrow \text{بجای}$$

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

$$a = -2$$

$$b = 1$$

$$a+b+C = 1+1-2 = 0$$

$$f(x) = (x-2)^2(x-1)$$

سوال

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

$$g(x) = (x-2)^2(x) + (x+2)^2(-x) = x(x^2 - 4x + 4 - x^2 - 4x - 4) = -8x$$

$$f(1-2x) = \begin{cases} 2\sqrt{x+2} & x \leq 0 \\ 2\sqrt{x} & x > 0 \end{cases} \quad f(-1) + f(2) \leftarrow \text{سوال}$$

$$1-2x = -1 \rightarrow 2x = 2 \rightarrow x = 1 \rightarrow 2\sqrt{1+2} = 2\sqrt{3}$$

$$1-2x \leq 2 \rightarrow -2 \leq 2x \rightarrow x \geq -1 \rightarrow 2\sqrt{-1+2} = 2$$

$$f(x+\sqrt{x}) = x^2 + 4x \quad f(4) = 8 \quad \text{نقطه تقاطع} \leftarrow \text{سوال}$$

$$x+\sqrt{x} = 4 \rightarrow x+\sqrt{x} - 4 = 0 \rightarrow (\sqrt{x}+2)(\sqrt{x}-2) = 0$$

$$\rightarrow \sqrt{x} = 2 \rightarrow x = 4$$

Subo

$$\left(\frac{8}{2} + 4 \right) = 8$$

$$f(x) = x^2 + x \rightarrow x(x^2 + 1)$$

← جواب

$$f(x-1) + f(1-x) = 8$$

$\hookrightarrow y$

$\hookrightarrow y$

$$\Rightarrow y(y^2+1) + -y(y^2+1)$$

$$\rightarrow y^3+y - y^3-y = \boxed{0}$$

$$f(x) = \sqrt{x-2a} + k - 1 \quad g(x) = \sqrt{b-x} + 3k \quad \leftarrow \text{سوال}$$

$$f \cap g = \{(1, k)\} \rightarrow P_f \cap P_g = \{1\}$$

$$\begin{aligned} \rightarrow P_f &\rightarrow [x-2a] \geq 0 \rightarrow x \geq \frac{2a}{2} \rightarrow \frac{2a}{2} = 1 \rightarrow 2a = 2 \rightarrow a = \frac{2}{2} \\ \rightarrow P_g &\rightarrow b-x \geq 0 \rightarrow x \leq \frac{b}{2} = 1 \rightarrow b = 2 \end{aligned}$$

$$f(1) = \sqrt{1-2} + k = 1$$

$$g(x) = \sqrt{2-x} + 3k \quad f \cap g = \{(1, 2k-2, 3k)\}$$

$$\rightarrow -k-2 = k \rightarrow k = -1$$

$$2a - \frac{b}{2} - k = (3)$$

$$f(x) = \sqrt{m-x} + n \quad g(x) = \sqrt{x+2} \rightarrow x \geq -1 \quad \leftarrow \text{سوال}$$

$$\hookrightarrow m-x \geq 0 \rightarrow x \leq m$$

$$P_f \cap g = [-1, \sqrt{m}]$$

$$P = g(3) = \sqrt{3+2} + n = \sqrt{5} + n = 4\sqrt{2}$$

$$\rightarrow 3+n-2\sqrt{2} = 4\sqrt{2} \rightarrow n = 6\sqrt{2}-3$$

$$m+n = 7+6\sqrt{2}-3 = \boxed{4+6\sqrt{2}}$$