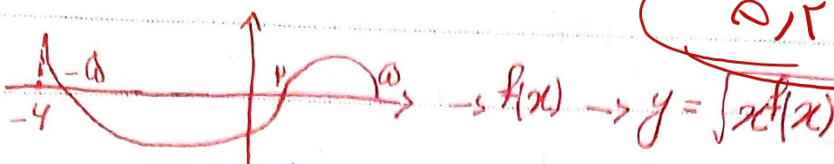


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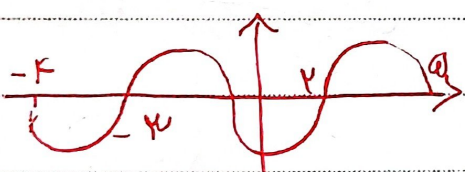
$$\begin{cases} x \geq 0 \\ f(x) \geq 0 \\ [2, 5] \\ x \leq 0 \\ f(x) \leq 0 \\ [-4, 2] \end{cases}$$

$$\begin{aligned} x f(x) &\geq 0 \rightarrow f(x) \in [2, 5] \text{ if } x \geq 0 \\ f(x) &\geq 0 \quad x \in [-4, 2] \end{aligned}$$

$$f(x) \leq 0 \quad x \in [2, 5] \quad / \quad x f(x) \geq 0 \quad \text{if } x \geq 0$$

$$f(x) \geq 0 \rightarrow x \in [0, 2] \text{ if } x \geq 0$$

$$Df = [-4, 2] \leftarrow \text{if } x \geq 0 \text{ then } x \in [0, 2]$$



$$y = \sqrt{\frac{-x}{f(x)}}$$

2.15

$$\frac{-x}{f(x)} \geq 0 \quad f(x) \neq 0 \quad f(x) \rightarrow [0, -\varepsilon] \quad f(x) > 0$$

$$Df = [-\varepsilon, 0) \cup (2, 5]$$

$$\begin{aligned} f(x) < 0 \\ (0, 2) \leftarrow \\ x = -\varepsilon, 0, 2, 5 \quad f(x) = 0 \end{aligned}$$

$$\begin{aligned} x \in (-\varepsilon, 0) \quad f(0) = 0, x = 0 \quad f(x) > 0 \quad x \geq 0 \leftarrow -x \leq 0 \quad \checkmark \\ x \in (0, 2) \quad f(x) < 0 \quad x \geq 0 \leftarrow -x \leq 0 \quad \checkmark \end{aligned}$$

$$\{ -\varepsilon, -\varepsilon - 1, 1, 2 \} \text{ is not a } \varepsilon \text{ neighborhood of } (-\varepsilon, 0) \cup (0, 2) \leftarrow \text{parsian}$$

ساخت

$$f(-1) \text{ دین } f(x) - 1f\left(\frac{1}{x}\right) = x^4 - 1^3x + \varepsilon$$

3

$$\begin{cases} f(x) - 1f\left(\frac{1}{x}\right) = x^4 - 1^3x + \varepsilon \\ f(1) = 1 \end{cases} \quad \text{برای } x=1 \quad f(1) = 1$$

$$f(-1) = -1 \quad f(x) = x$$

0

$$f(f(0)) + f(f(1)) \quad \text{دین } f(x) = \begin{cases} x - \sqrt{x+1} & ; x \geq 0 \\ 1/x + 1 & ; x < 0 \end{cases}$$

$$f(1) = 1 \rightarrow 1 + 1 = 2 \quad f(f(1)) = f(2) \rightarrow 2 > 1 \rightarrow \text{جواب 2}$$

4

$$f(0) = 0 - \sqrt{0+1} = 0 - 1 = -1 \quad f(f(0)) = f(-1)$$

1

$$-1 < 1 \rightarrow \text{جواب 1} \rightarrow f(1) = 1(1) + 1 = 2$$

$$f(f(1)) + f(f(0)) = 2 + 1 = 3$$

$$f(x+1) - f(x) = 4x + 1$$

$$f(x) = ax^2 - bx + 1$$

15

$$f(x-1) \rightarrow a(x-1)^2 - b(x-1) + 1$$

8a-b دین

$$f(x-1) = a(x^2 - 2x + 1) - bx + b + 1$$

1

$$f(x-1) = ax^2 - 2ax + a - bx + b + 1$$

$$f(x-1) - f(x) \rightarrow (ax^2 - 2ax + a - bx + b + 1) - (ax^2 - bx + 1) \rightarrow$$

20

$$-2ax + a + b = 4x + 1 \rightarrow -2a = 4 \rightarrow a = -2 \quad a + b = 1$$

$$-2 + b = 1 \rightarrow b = 3$$

$$a - b \rightarrow -2 - 3 = -5$$

6 اگر $f(x) = \frac{x^p + \varepsilon x + 1}{x^p + \varepsilon x + \nu}$ مقدار $f(\sqrt{\nu} - 1)$ را بیابید

$$\left. \begin{aligned} (x^p + \varepsilon x + 1) + 1 &\rightarrow (x + \nu)^p + 1 \\ (x^p + \varepsilon x + \varepsilon) + \nu &\rightarrow (x + \nu)^p + \nu \end{aligned} \right\} \rightarrow \frac{(x + \nu)^p + 1}{(x + \nu)^p + \nu} \rightarrow \frac{\sqrt{\nu} - 1 + \nu - (\sqrt{\nu})^p + 1}{(\sqrt{\nu})^p + \nu}$$

$$\frac{\nu + 1}{\nu + \nu} = \frac{\varepsilon}{\nu} = \frac{\nu}{\nu}$$

5

7 مقدار $f(x) = \frac{x^p + 1}{x^p}$ را بیابید

$$\frac{x^p}{x^p} + \frac{1}{x^p} = x^p + \frac{1}{x^p} \rightarrow x - \frac{1}{x} = \nu \quad / \quad x^p + \frac{1}{x^p} \rightarrow (x - \frac{1}{x})^p + \nu$$

$$f(\nu) = (\nu)^p + \nu = 9 + \nu = 11$$

10

8 اگر $g(x) = \sqrt{9 - x^2}$ و $f(x) = \left\{ (1, 0), (0, 1), (1, 1) \right\}$ را بیابید

$[1, 0]$ و $[0, 1]$ و $[1, 1]$ را بیابید

$$\sqrt{9 - x^2} - \sqrt{9 - \varepsilon} = \sqrt{9} \rightarrow \frac{0}{\sqrt{9}} = 0 \quad / \quad \sqrt{9 - 1} = \sqrt{1} \rightarrow \frac{-1}{\sqrt{1}}$$

$$\sqrt{9 - 0} \rightarrow \frac{\nu}{\sqrt{9} = \nu} \rightarrow \frac{\nu}{\nu} \quad / \quad \frac{\sqrt{1}}{-1} \rightarrow \frac{\nu}{\mu} \rightarrow \frac{\nu}{\mu}$$

باید به صورت مجموع از نشون بدهی

