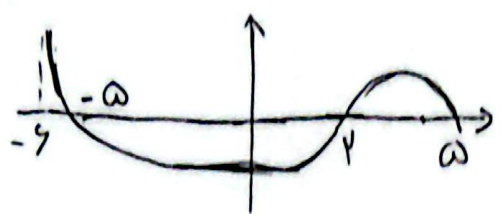


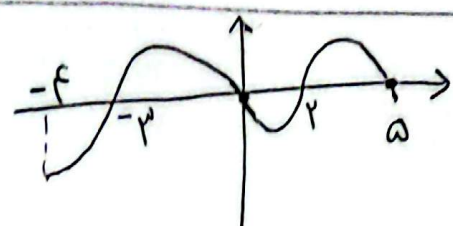
الفنا شیرستانی ده هم یکتا



$$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0$$

$$D_f = [-5, 0] \cup [1, 5]$$

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



$$y = \sqrt{\frac{0}{f(0)}} \checkmark$$

$$D_f = \{0\}$$

⇓

$$\frac{-x}{f(x)} \geq 0$$

$$y = \sqrt{\frac{-5}{f(5)}} \times$$

$$y = \sqrt{\frac{-1}{f(1)}} \times$$

$$y = \sqrt{\frac{+3}{f(-3)}} \times$$

$$y = \sqrt{\frac{4}{f(-4)}} \times$$

$$f(x) - 1 \cdot f(1) = x^2 - 1x + 1$$

$$f(-1) = ?$$

$$f(1) - 1 \cdot f(1) = 1 - 1 + 1$$

$$\Rightarrow f(-1) + 1 = 1 + 1 + 1$$

$$\underline{-f(1) = -1}$$

$$\underline{f(-1) = 1}$$

$$f(x) = \begin{cases} x - \sqrt{x+1} & x > 1 \\ 1x + 3 & x \leq 1 \end{cases}$$

$$f(5) = 5 - \sqrt{6} = 1$$

$$f(1) = 1 + 3 = 4$$

$$f(1) = 5$$

$$f(f(5)) + f(f(1)) = ? \quad 1 + 4 = 5$$

۵- در مورد تابع $f(x) = ax^2 - bx + 1$ و $f(x-1) - f(x) = 9x + 2$ برای هر مقادیر

x برقرار است. a, b را بیابید.
 $f(x-1) - f(x) = 9x + 2 \Rightarrow a(x^2 - 2x + 1) + a + 1 - bx + 1 - ax^2 + bx - 1 = 9x + 2$

$$a + 1 - 2ax + 1 - bx + 1 - ax^2 + bx - 1 = 9x + 2$$

$$x = 1, 2$$

$$a + 1 - 2ax = 9x + 2 \Rightarrow a = 1$$

$$9a = 2b \Rightarrow a = \frac{2b}{9}$$

$$f(x) = x^2 - 3x + 1$$

$$f(3) = 9 - 9 + 1 \Rightarrow f(3) = 1$$

-6

$$\frac{3f(3) + f(-1)}{f'(3)} = \frac{3 + 2}{(-1)^2} = \left(\frac{5}{1}\right) f(3) = 9 - 9 + 1 \Rightarrow -1$$

$$f(x) = \begin{cases} 3x + 1 & x \geq 2 \\ x^2 & x < 2 \end{cases} \quad f(2) = 13 \quad f(2) = 4$$

-7

$$\frac{3f(2) - 2f(-2)}{f(2)} = \frac{39 - 4}{4} = \frac{35}{4}$$

$$f = \{(2, 9), (3, 2), (4, 1), (1, 9)\}$$

-1

$$\frac{f(f(4)) - f(f(3))}{f(1) - 2} = \frac{9 - 9}{4} = \frac{0}{4} = 0$$

$$f(x) = \frac{x^2 + 5x + 9}{x^2 + 5x + 2}$$

-9

$$f(f(\sqrt{3} - 2)) = \frac{(\sqrt{3} - 2)^2 + 5\sqrt{3} - 1 + 9}{(\sqrt{3} - 2)^2 + 5\sqrt{3} - 1 + 2} = \frac{3 + 2 - 4\sqrt{3} + 5\sqrt{3} - 1 + 9}{3 + 2 - 4\sqrt{3} + 5\sqrt{3} - 1 + 2} = \frac{9}{4} = 9$$

$$f(3) = \frac{9 + 15 + 9}{9 + 15 + 2} = \frac{33}{26} = \left(\frac{15}{13}\right)$$

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

-10

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