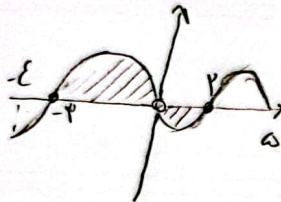
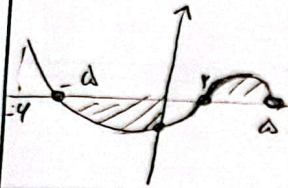


$$x f(x) \geq 0 \Rightarrow \begin{matrix} \text{ایم} - \\ \text{ایم} + \\ \text{ایم} 0 \end{matrix} \Rightarrow D_f: [-5, 0] \cup [2, 5]$$



$$\Rightarrow f(x) \neq 0 \Rightarrow D_f = (-3, 2) - \{0\}$$

$$f(2) = 9 \Rightarrow \frac{f(2) - 2f(2)}{-f(2)} = \frac{9 - 4 + 9}{2} \Rightarrow f(2) = -2$$

$$f(-2) + 9 = 9 + 4 + 9 \Rightarrow f(-2) = 10$$

$$\underbrace{f(f(4))}_2 + \underbrace{f(f(1))}_2 = 4$$

$$\begin{aligned} a(x-1)^2 - b(x-1) - ax^2 + bx &= 4x + 2 \\ ax^2 - 2ax + a - bx + b - ax^2 + bx &= 4x + 2 \\ -2ax + a + b &= 4x + 2 \\ \begin{cases} -2a = 4 \\ a + b = 2 \end{cases} &\Rightarrow \begin{cases} a = -2 \\ a + b = 2 \end{cases} \\ &\Rightarrow \begin{cases} a = -2 \\ b = 4 \end{cases} \\ a - b &= -2 - 4 = -6 \end{aligned}$$

$$\frac{2f(3) + f(-1)}{f^2(2)}$$

$$\Rightarrow \begin{aligned} f(3) &= 1 \\ f(-1) &= 5 \\ f(2) &= -1 \end{aligned}$$

$$\Rightarrow f^2(2) = f(f(2)) = \frac{2+5}{-1} = -\frac{7}{1} = -7 \quad (1)$$

$$\Rightarrow f^2(2) = (f(2))^2 = \frac{2+5}{1} = 7 \quad (2)$$

جواب سوال بهیچ داریه "باین" "علاوه بر این" در سوال ۲ می است. البته ایدم به سوال ۱۰ در مثال خارج از برنامه است پس ۱۰ درست است

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

$$\Rightarrow \begin{aligned} f(4) &= 18 \\ f(-2) &= 8 \\ f(2) &= 7 \end{aligned}$$

$$\Rightarrow \frac{3 \cdot 18 - 2 \cdot 8}{7} = \frac{41}{7}$$

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

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

$$f(x) = \frac{(x+2)^2 + 4}{(x+2)^2 + 1} \Rightarrow f(\sqrt{3}-2) = \frac{(\sqrt{3})^2 + 4}{(\sqrt{3})^2 + 1} = \frac{7}{4} = \frac{1}{4} = \boxed{\frac{1}{4}}$$

$$\Rightarrow f(2) = \frac{(4)^2 + 4}{(4)^2 + 1} = \frac{20}{17}$$

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

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