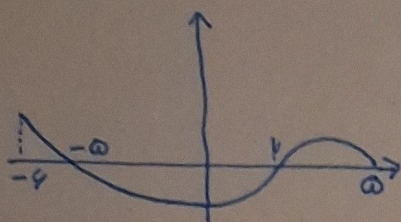


$$y = \sqrt{x f(x)} \rightarrow x f(x) \geq 0$$

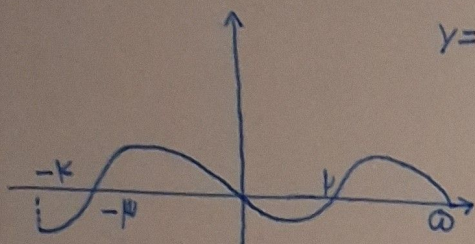


- از $x = -5$ تا $x = 0$ هم مثبت هم منفی $f(x)$ منفی $\leftarrow$ حاصل ضرب $\oplus$
 از $x = 0$ تا $x = 2$ هم مثبت هم منفی $f(x)$ مثبت $\leftarrow$ حاصل ضرب $\ominus$
 از $x = 2$ تا $x = 5$ هم مثبت هم مثبت $f(x)$ مثبت $\leftarrow$ حاصل ضرب $\oplus$

$$D_f = [-5, 0] \cup [2, 5]$$

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$$y = \sqrt{\frac{-x}{f(x)}} \rightarrow \frac{-x}{f(x)} \geq 0 \rightarrow f(x) \neq 0 \begin{cases} x = -3 \\ x = 0 \\ x = 2 \end{cases}$$



$$\hookrightarrow D_f = (-3, 0) \cup (0, 2)$$

$$\hookrightarrow -2 < -1 < 1 \in \mathbb{Z} \rightarrow \textcircled{11}$$

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$$f(x) - 2f(y) = 2x - 3x + 4 \xrightarrow{x=y} f(y) - 2f(y) = 4 - 6 + 4 \rightarrow -f(y) = 2 \rightarrow f(y) = -2$$

$$f(-2) - 2(-2) = \underbrace{(-2)^2}_{4} - \underbrace{3(-2)}_{-6} + 4 \rightarrow f(-2) + 4 = 4 + 6 + 4 \rightarrow f(-2) = 10$$

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$$f(x) = \begin{cases} x - \sqrt{x+4} & x > 3 \\ 2x+3 & x \leq 3 \end{cases} \quad f(f(5)) + f(f(1)) = ? \rightarrow 7+7 = \textcircled{14}$$

$$f(5) = 5 - \underbrace{\sqrt{5+4}}_3 \rightarrow 5 - 3 = 2 \rightarrow f(2) = 4+3 = 7$$

$$f(1) = 2+3 = 5 \rightarrow f(5) = 5 - 3 = 2$$

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$$f(x) = ax^2 - bx + 2 \rightarrow f(0) = 0 - 0 + 2 \rightarrow f(0) = 2$$

$$f(x-1) - f(x) = 4x+2 \xrightarrow{x=1} f(0) - f(1) = 8 \rightarrow 2 - f(1) = 8 \rightarrow f(1) = -6$$

$$f(1) = a - b + 2 = -6 \rightarrow a - b = \textcircled{-8}$$

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$$f(x) = 2x - 3x + 1 \rightarrow \frac{2f(2) + f(-1)}{f(2)} = \frac{2 + 0}{1} = \textcircled{2}$$

$$f(2) = 9 - 9 + 1 = 1$$

$$f(-1) = 1 + 3 + 1 = 5$$

$$f(2) = 2 - 9 + 1 = -6$$

$$f(x) = \begin{cases} 3x + 1 & x > 2 \\ 2x & x < 2 \end{cases} \rightarrow \frac{3f(3) - 2f(-2)}{f(2)} = \frac{3 \cdot 10 - 4}{2} = \textcircled{\frac{26}{2}}$$

$$f(3) = 3 \times 3 + 1 = 10$$

$$f(-2) = (-2) \times 2 = -4$$

$$f(2) = 3 \times 2 + 1 = 7$$

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

$$f(3) = 1 \rightarrow f(1) = 9$$

$$f(2) = 4 \rightarrow f(4) = 2$$

$$f(1) = 9$$

$$f(x) = \frac{2x + 3x + 9}{2x + 3x + 0} \rightarrow \frac{(2x + 3x + 0) + 3}{2x + 3x + 0} = \frac{5}{5} = 1$$

$$2x + 3x + 0 \xrightarrow{x = \sqrt{10} - 2} (\sqrt{10} - 2) \times 2 + 3(\sqrt{10} - 2) + 0 = 2 + 3 - 2\sqrt{10} + 3\sqrt{10} - 6 + 0 = \sqrt{10} - 1$$

$$f(2) = \frac{3 + 5 + 9}{3 + 5 + 0} = \textcircled{\frac{17}{8}}$$

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

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