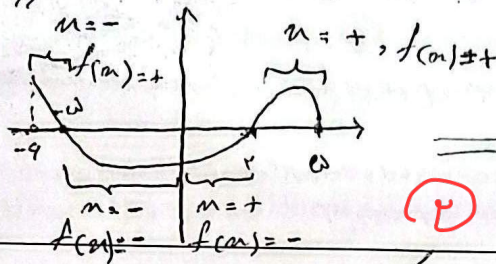


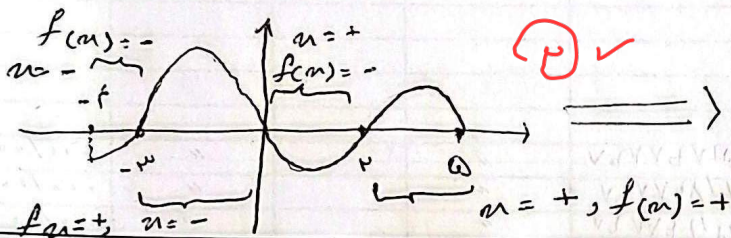
اگر m و $f(m)$ هم علامت باشند یا یکی صفر باشد دامنه می شود



$$[-4, 0] \cup [2, 4]$$

✓ (۲)

مخرج کسر نباید صفر باشد و در برادها هم منفی نباید باشد - چون در سر منفی داریم باید m و $f(m)$ هم علامت نباشند



$$(0, 2) \cup (-3, 0)$$

✓ (۲)

$$f(m) \neq f(r) = m^2 - 3m + 4 \rightarrow m = 2 \rightarrow f(2) - 2f(2) = 4 - 4 + 4 - f(2) = 2$$

$$f(-2) = ?$$

$$\boxed{f(-2) = 10} \rightarrow \text{جواب}$$

$$\boxed{f(2) = -2}$$

$$f(-2) - 2f(2) = 4 + 4 + 4 \Rightarrow f(-2) + 4 = 14 \Rightarrow f(-2) = 10$$

$$f(f(5)) + f(f(1)) = 13 - 2\sqrt{4} + 5 - \sqrt{4} \quad f(m) = \begin{cases} m - \sqrt{m+1} & m \geq 3 \\ 2m + 3 & m < 3 \end{cases}$$

$$f(5) = 5 - \sqrt{4}$$

$$\sqrt{4} = 2, 4$$

$$5 - 2, 4 = 2, 4 \rightarrow 2, 4$$

$$f(1) = 2 + 3 = 5$$

$$f(5) = 5 - \sqrt{4}$$

$$am^2 - bm + 2 = f(m) \Rightarrow f(m) = 2 \quad \left\{ \begin{array}{l} f(1) - f(1) = 4 + 2 \\ f(5) - f(5) = 1 \end{array} \right.$$

$$m \rightarrow 1 \Rightarrow f(1) = a - b + 2$$

$$\boxed{a - b = -1}$$

$$-1 = a - b$$

$$\begin{cases} f(5) = 5 - \sqrt{5+4} = 2 \\ f(1) = 2(1) + 3 = 5 \end{cases}$$

$$\rightarrow f(f(5)) + f(f(1)) = f(2) + f(5) \quad f(2) = 2(2) + 3 = 7$$

$$7 + 2 = 9$$

$$\frac{f(x) + f(-1)}{f'(x) - (-1)^2} = \frac{V}{1} = \textcircled{V} \rightarrow \text{جواب}$$

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

$$f(x) \rightarrow n^2 - 3n + 1 = 9 - 9 + 1 = \textcircled{1}$$

$\textcircled{2} \checkmark$

$$f(-1) = (-1)^2 + 3 + 1 = 1 + 3 + 1 = \textcircled{5} \quad f(x) = 9 - 9 + 1 = \textcircled{-1}$$

$$\frac{f(x) - f(-x)}{f'(x)} = \frac{3x - 1}{V} = \frac{3x}{V}$$

$$f(n) = \begin{cases} 3n + 1 & n \text{ زوج} \\ n^2 & n \text{ فردي} \end{cases}$$

$\textcircled{2} \checkmark$

$$f(x) = 3x + 1 = 13 \quad 3 \times 4 = 12$$

$$f(-x) = (-x)^2 = 8 \quad 2 \times 4 = 8$$

$$f(x) = 4 + 1 = \textcircled{5}$$

$$\frac{f(f(x)) - f(f(x))}{f'(1) - 2} = \frac{4 - 6}{4 - 2} = \frac{0}{2} = 0$$

$$f = \{(1, 4), (2, 2), (3, 1), (4, 0)\}$$

$$\begin{array}{l} f(1) = 1 \quad f(2) = 2 \quad f(3) = 4 \\ f(4) = 4 \quad f(2) = 6 \end{array}$$

$\textcircled{2} \checkmark$

$$\frac{(\sqrt{x}-1)^2 + f(\sqrt{x}-2) + 9}{(\sqrt{x}-2)^2 + f(\sqrt{x}-2) + 6} = \frac{3 + 6 - 2\sqrt{x} + 6\sqrt{x} - 4 + 9}{3 + 6 - 2\sqrt{x} + 6\sqrt{x} - 4 + 6} = \frac{1}{2}$$

$$f(x) = \frac{x+1+9}{x+1+6} = \frac{21}{14}$$

$\textcircled{2} \checkmark$

$$f(n) = n^2 + \frac{1}{n^2} \rightarrow (n + \frac{1}{n})^2 - 2$$

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

$$= \left(\left(\sqrt{n} + \frac{1}{\sqrt{n}} \right)^2 - 2 \right)^2$$

$$= n + \frac{1}{n} + 2$$

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

$$= f(n)$$