

$$xf(x) \geq 0 \xrightarrow{Df} [-1 \ 0] \cup [2 \ 4]$$

$f(x) \geq 0$ است
 $f(x) < 0$ است
 در تغییرات علامت باید دقت کرد
 مثبت است

$$\frac{-x}{f(x)} \rightarrow f(x) \neq 0 \rightarrow \begin{cases} x > 0 & f(x) < 0 \\ x < 0 & f(x) > 0 \end{cases} \Rightarrow Df: (-2 \ 2) - \{0\}$$

همه وقت باید علامت باشند

$$\left. \begin{aligned} f(-2) - 2f(2) &= 14 \\ f(2) - 2f(2) &= 2 \rightarrow f(2) = -2 \end{aligned} \right\} \rightarrow f(-2) = 14 - 8 \rightarrow \underline{f(-2) = 6}$$

$$\begin{aligned} f(1) &= 4 \\ f(4) &= 2 \\ f(2) &= 7 \end{aligned} \quad f(x) = f(4) \rightarrow \underline{7 \leq x \leq 9}$$

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

$$f(x-1) - f(x) = -2ax + a + b \rightarrow -2ax + a + b = 4x + 2 \rightarrow -2ax = 4x + 2 - a - b$$

$$\underline{-1 = -3 - 1} \rightarrow a - b = b + 4 \rightarrow b = 3 + 2 \rightarrow a + b = 5 \rightarrow a = 2$$

$\left. \begin{aligned} f(x) &= 9 - 2x + 1 \\ f(-1) &= 1 + 3 + 1 = 5 \\ f(x) &= 8 - 2x + 1 \end{aligned} \right\} \rightarrow \frac{x f(x) + f(-1)}{f'(x)} = \frac{x + 5}{1} = \underline{V}$	6
$\left. \begin{aligned} f(x) &= 12 + 1 = 13 \\ f(-x) &= 8 \\ f(x) &= 4 + 1 = 5 \end{aligned} \right\} \rightarrow \frac{x9 - 1}{5} = \frac{x1}{5}$	7
$\left. \begin{aligned} f(x) &= 1 \\ f(1) &= 4 \\ f(x) &= x \\ f(x) &= 4 \end{aligned} \right\} \rightarrow \frac{f(1) - f(x)}{f(1) - x} \rightarrow \frac{4 - 4}{4 - x} = \frac{0}{x} = \underline{0}$	8
$f(\sqrt{x}) = \frac{x - \sqrt{x} + 1 + \sqrt{x} - 1 + 9}{x - \sqrt{x} + 1 + \sqrt{x} - 1 + 1} = \frac{1}{1} = 1$ $f(x) = \frac{1 + 1 + 9}{1 + 1 + 1} = \frac{11}{3}$	9
$f(\sqrt{x}) = \left(x + \frac{1}{x}\right)^2 \rightarrow x^2 + 2 + \frac{1}{x^2} - x^2 - \frac{1}{x^2} = \underline{2}$	10