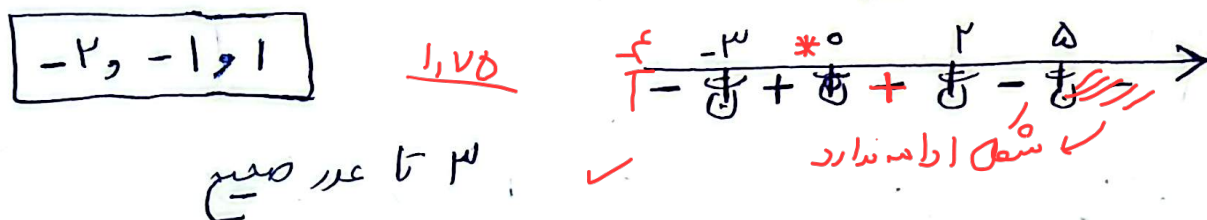


$$x f(x) \geq 0 \rightarrow [-5, 0] \cup [2, 5]$$

در سمت چپ قرار می‌گیرد که هم $f(x)$ و x هر دو مثبت یا هر دو منفی باشند که هم علامت شده و از زیر رادیکال بیرون آید. $\checkmark$ $\odot$

$$f(x) \neq 0 \rightarrow 5, 2, -3 \quad X \quad -\frac{x}{f(x)} > 0$$



$$x=2 \rightarrow f(2) - 2f(2) = 4 - 9 + 4 \rightarrow f(2) = -2$$

$$f(x) + 4 = x^2 - 3x + 4 \rightarrow f(x) = x^2 - 3x$$

$$f(-2) = 4 + 9 = 13$$

$\checkmark$ $\odot$

$$f(f(5)) + f(f(1))$$

$$7 + 2 =$$

$$9$$

$\checkmark$ $\odot$

$$f_5 = 5 - 3 = 2$$

$$f_2 = 4 + 3 = 7$$

$$f_1 = 2 + 3 = 5$$

$$f_5 = 5 - 3 = 2$$

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

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

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

$$a - 2ax + b = 9x + 2 \rightarrow -2a = 9 \rightarrow a = -\frac{9}{2}$$

$$a - b = -\frac{9}{2} - 5 = -\frac{19}{2}$$

$$\checkmark \odot + b = 2 \rightarrow -\frac{9}{2} + b = 2 \rightarrow b = \frac{13}{2}$$

$\frac{f'(w) + f(-1)}{f'(v)}$ $f(w) = 9 - 9 + 1 = 1$ $f(v) = 1 - 9 + 1 = -1$	$f(x) = x^2 - 10x + 1$ $f(-1) = 1 + 10 + 1 = 12$ $\frac{1 + 12}{1} = 13$	6
$\frac{wf'(v) - vf'(-v)}{f(v)}$ $\frac{19 - 1}{9} = \frac{18}{9} = 2$	$wf(v) = x = 1 \rightarrow w(1^2 + 1) = 19$ $vf(-v) = x = -1 \rightarrow v(-1)^2 = 1$ $f(v) = x = 1 \rightarrow w \cdot 1 + 1 = 9$	7
$\frac{f(f(v)) - f(f(w))}{f(1) - v}$ $\frac{9 - 9}{1 - 1} = \frac{0}{0} = 0$	$f(v) = 1 \rightarrow f(1) = 9$ $f(w) = 1 \rightarrow f(1) = 9$ $f(1) = 9$	8
$x^2 + 10x = (\sqrt{10} - 1)^2 + 10(\sqrt{10} - 1) = 10 + 10\sqrt{10} - 2 - 10\sqrt{10} - 10 = -2$ $x^2 + 10x = 10 + 10 = 20$	$f(x) = \frac{x^2 + 10x + 9}{x^2 + 10x + 12}$ $f(\sqrt{10} - 1) = \frac{-1 + 9}{-1 + 12} = \frac{8}{11}$ $f(1) = \frac{10 + 9}{10 + 12} = \frac{19}{22}$	9
$(f(\sqrt{x}))^2 - f(x)$ $(x + \frac{1}{x})^2 - (x^2 + \frac{1}{x^2}) = x^2 + \frac{1}{x^2} + 2 - x^2 - \frac{1}{x^2} = 2$	$f(\sqrt{x}) = x + \frac{1}{x}$	10