

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

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

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

$$\boxed{-2, -1, 1}$$

$$-\frac{-3}{-3} + \frac{0}{0} - \frac{2}{2} - \frac{5}{5} \rightarrow$$

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

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

$$f(-2) = 4 + 6 = \boxed{10}$$

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

$$7 + 2 =$$

$$\boxed{9}$$

$$f_5 = 5 - 3 = 2$$

$$f_2 = 4 + 3 = 7$$

$$f_1 = 2 + 3 = 5$$

$$f_5 = 5 - 3 = 2$$

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

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

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

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

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

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

$\frac{f(4) + f(-1)}{f'(1)}$ $f(4) = 9 - 9 + 1 = 1$ $f(1) = 1 - 9 + 1 = -1$	$f(x) = x^2 - 8x + 1$ $f(-1) = 1 + 8 + 1 = 10$ $\frac{1 + 10}{1} = \boxed{11}$	6
$\frac{f(4) - f(-1)}{f'(1)} \rightarrow$ $\frac{10 - 1}{1} = \boxed{9}$	$f(x) = x^2 - 8x + 1$ $f(4) = 16 - 32 + 1 = -15$ $f(-1) = 1 + 8 + 1 = 10$ $f'(x) = 2x - 8 \rightarrow f'(1) = 2 - 8 = -6$ $\frac{-15 - 10}{-6} = \frac{-25}{-6} = \frac{25}{6}$	7
$\frac{f(f(1)) - f(f(4))}{f(1) - 4}$ $\frac{9 - 9}{1 - 4} = \frac{0}{-3} = \boxed{0}$	$f(x) = x^2 - 8x + 1$ $f(1) = 1 - 8 + 1 = -6$ $f(4) = 16 - 32 + 1 = -15$ $f(f(1)) = f(-6) = 36 - 48 + 1 = -11$ $f(f(4)) = f(-15) = 225 - 120 + 1 = 106$ $\frac{-11 - 106}{-6 - (-15)} = \frac{-117}{9} = -13$	8
$x^2 + 4x = (\sqrt{4} - 1)^2 + 4(\sqrt{4} - 1)$ $4 + 4 - 2\sqrt{4} + 2\sqrt{4} - 1 = 7$ $x^2 + 4x = 4 + 7 = 11$	$f(x) = \frac{x^2 + 4x + 9}{x^2 + 4x + 1}$ $f(\sqrt{4} - 1) = \frac{-1 + 9}{-1 + 1} = \frac{8}{0} = \text{undefined}$ $f(1) = \frac{1 + 4 + 9}{1 + 4 + 1} = \frac{14}{6} = \frac{7}{3}$	9
$(f(\sqrt{x}))^2 - f(x)$ $\left(x + \frac{1}{x}\right)^2 - \left(x^2 + \frac{1}{x^2}\right) = x^2 + \frac{1}{x^2} + 2 - x^2 - \frac{1}{x^2} = 2$ $\boxed{2}$	$f(\sqrt{x}) = x + \frac{1}{x}$	10