

$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0$ $+ f(x) \geq -x$ $\downarrow$ $[-4, 0] \cup [2, 4]$ تایم قطع	1
$y = \sqrt{\frac{-x}{f(x)}} \Rightarrow \frac{-x}{f(x)} \geq 0 \quad f(x) \neq 0$ $x < 0$ $x > 0$ $x = 0$ $x < 0$ $x > 0$ $x = 0$	2
$f(x) - 2f(-x) = x^2 - 3x + 4$ $f(-2) + 4 = 4 + 4 + 4$ $f(-2) = 10$ $-f(x) = 2$ $f(x) = -2$	3
$f(f(5)) + f(f(f(1)))$ $5 - \sqrt{4} = 3$ $3 - \sqrt{4} = 1$ $1 - \sqrt{4} = -1$	4
$f(n) = an^2 - bn + 1$ $f(n-1) - f(n) = 4n + 2$ $an^2 - 2an + a - bn + 1 - (a(n-1)^2 - b(n-1) + 1)$ $4n + 2 = -2an + a + b$ $a - b = -1$ $a = -3 \quad b = 4$	

$f(x) = x^2 - 3x + 1$ $1 - 3 + 1 = 0$ $9 - 9 + 1$ $\frac{f(1) + f(-1)}{f'(1)} = \frac{1}{1} = 1$ $2x - 3 \Rightarrow 1$	6
$f(x) = \begin{cases} x^2 + 1 & x \geq 1 \\ x^2 & x < 1 \end{cases}$ $\frac{f(1) - f(-1)}{f'(1)} = \frac{1}{1}$	7
$\frac{f(f'(1)) - f(f'(1))}{f(1) - 1} = \frac{4 - 4}{4 - 1} = \frac{0}{3} = 0$	8
$\frac{(\sqrt{2}-1)^2 + f(\sqrt{2}-1) + 9}{(\sqrt{2}-1)^2 + f(\sqrt{2}-1) + 5} = \frac{1 + 1 - \cancel{f\sqrt{2}} + \cancel{f\sqrt{2}} - 1 + 9}{1 + 1 - \cancel{f\sqrt{2}} + \cancel{f\sqrt{2}} - 1 + 5} = \frac{1}{5} = \frac{1}{5}$	9
$f(x) = x^2 + \frac{1}{x^2}$ $(\sqrt{x})^2 = x$ $x^2 + 1(x \cdot \frac{1}{x}) + \frac{1}{x^2} \quad x \cdot \frac{1}{x} = 1$ $(f(\sqrt{x}))^2 = x^2 + 1 + \frac{1}{x^2}$ $(x^2 + 1 + \frac{1}{x^2}) - (x^2 + \frac{1}{x^2})$ $\frac{1}{2x} - \frac{1}{2x} = 0$	10