

$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0$ $f(x) \geq -x$ $[-4, 0] \cup [2, 5]$ $D_f = [-4, 0] \cup [2, 5]$ $x = -4 < 2$ $-4 \quad -2 \quad 0 \quad 2 \quad 5$ $- \quad - \quad + \quad - \quad +$ $1, 6$	۱
$y = \sqrt{\frac{-x}{f(x)}} \Rightarrow \frac{-x}{f(x)} \geq 0 \quad f(x) \neq 0$ $\frac{-x}{f(x)} \geq 0 \Rightarrow \frac{x}{f(x)} \leq 0$ $-4 \quad -2 \quad 0 \quad 2 \quad 5$ $- \quad - \quad + \quad - \quad +$ $D_f = (-4, 2) \cup (2, 5)$ $f(x) < 0, x > 0$ $f(x) > 0, x < 0$ $2, 6$	حالت اول: حالت دوم: ۲
$f(x) - 2f(2) = x^2 - 3x + 4$ $f(2) - 2f(2) = 4 - 4 + 4$ $-f(2) = 4$ $f(2) = -4$ $f(-2) + 4 = 4 + 4 + 4$ $f(-2) = 10$ $f(-2) = ?$ ۱۰	۳
$f(f(5)) + f(f(f(1)))$ $4 + 2 = 6$ $\omega = \sqrt{x}$ $f(x) = \begin{cases} x - \sqrt{x+1} & x > 2 \\ 2x+2 & x \leq 2 \end{cases}$	۴
$f(x) = ax^2 - bx + 2$ $f(x+1) - f(x) = 4x + 2$ $ax^2 - 2ax + a - bx + 2 + 4x + 2 = (ax^2 - bx + 2) - (ax^2 - bx + 2)$ $4x + 2 = -2ax + a + b$ $a - b = -4$ $a = -3, b = 2$	۵

$f(x) = x^r - r x + 1$ $1 - r + 1 = 0$ $9 - 9 + 1 = 1$ $\frac{f(1) + f(-1)}{f'(1)} = \frac{1}{1} = 1$ $r x - r \Rightarrow 1$	8
$f(x) = \begin{cases} r x + 1 & x \geq r \\ x^r & x < r \end{cases}$ $\frac{r f(r) - r f(-r)}{f(r)} = \frac{r}{1}$	7
$\frac{f(f(1)) - f(f(-1))}{f(1) - r} = \frac{4 - 4}{4 - r} = \frac{0}{r} = 0$	6
$\frac{(\sqrt{r}-r)^r + f(\sqrt{r}-r) + 9}{(\sqrt{r}-r)^r + f(\sqrt{r}-r) + 5} = \frac{r + r - f(\sqrt{r}) + f(\sqrt{r}) - 1 + 9}{r + r + f(\sqrt{r}) + f(\sqrt{r}) - 1 + 5} = \frac{1}{5} = \frac{1}{5}$ $f(\sqrt{r}-r) = \frac{(\sqrt{r}-r)^r + 5}{(\sqrt{r}-r)^r + 1} = \frac{r + 5}{r + 1} = r$ $f(f(\sqrt{r}-r)) = f(r) = \frac{(r+5)^r + 5}{(r+5)^r + 1} = \frac{r}{14}$	9
$f(x) = x^r + \frac{1}{x^r}$ $(\sqrt{x})^r = x$ $x^r + r(x \cdot \frac{1}{x}) + \frac{1}{x^r}$ $(f(\sqrt{x}))^r = x^r + r + \frac{1}{x^r}$	10