

~~.....~~ $[2, 5] \cup [-5, 10]$ $\sqrt{x f(x)}$ 1
 $x f(x) \geq 0$ یا هر دو مثبت یا هر دو منفی
 یا یکی مثبت و دیگری منفی

$y = \sqrt{\frac{-x}{f(x)}}$

$f(x) \neq 0 \rightarrow 0, -4, -2, 2, 4 \rightarrow$ حذف
 $P_f = \{-2, -1, 1\} \rightarrow$ عدد

$f(x) - 2f(2) = x^2 - 3x + 4$ $f(-2) = ?$
 $f(2) - 2f(2) = 4 - 6 + 4$ $f(-2) + 2 = 4 + 4 + 4$
 $-f(2) = 2$ $f(-2) = 12$
 $f(2) = -2$

$f(x) = \begin{cases} x - \sqrt{x+4} & x > 3 \\ 2x + 3 & x \leq 3 \end{cases}$ $f(f(8)) + f(f(1)) = ?$

$1 \leq 3 \Rightarrow 2x + 3 = 2 + 3 = 5 \Rightarrow f(1) = 5$
 $f(5) \Rightarrow x - \sqrt{x+4} = 5 - \sqrt{9} = 2 \Rightarrow f(8) = 2 \rightarrow f(f(1)) = 2$
 $f(2) = 2x + 3 = 4 + 3 = 7 \rightarrow 7 + 2 = 9$

$f(x) = ax^2 - bx + 1 \rightarrow f(x-1) - f(x) = 2x + 1$ $a - b = ?$
 $a(x^2 - 2x + 1) - b(x-1) + 1 - ax^2 - bx + 1 = 2x + 1$
 $a(x^2 - 2x + 1) - b(x-1) + 1 - ax^2 - bx + 1 = 2x + 1$
 $\Rightarrow -2ax + a - bx + b - bx + 1 = 2x + 1$
 $-2ax + a - bx + b - bx = 2x \rightarrow x(-2a - b - b) + a + b = 2x$
 $x(-2a - 2b) + a + b = 2x$
 $-2a - 2b = 2 \rightarrow -a - b = 1$

$f(x) = x^r - 3x + 1$ $\frac{r f(r) + f(-1)}{f'(r)} = ? \quad \frac{r+1}{1} = \underline{r}$	$f(r) = 9 - 9 + 1 = 1$ $f(-1) = 1 + 3 + 1 = 5$ $f'(r) = r - 3 = -1$	6
$f(x) = \begin{cases} rx + 1 & x \geq r \\ x^r & x < r \end{cases}$ $\frac{rf(r) - f(-r)}{f'(r)} = \frac{r^2 - 1}{r} = \underline{\frac{r-1}{r}}$	$f(r) = r^2 + 1 = 17 + 1 = 18$ $f(-r) = (-r)^r = -1$ $f'(r) = r = 17$	7
$f = \{(r, q), (r, r), (r, 1), (1, q)\}$ $\frac{f(f(r)) - f(f(r))}{f(1) - r} = \frac{f(1) - f(r)}{q - r} = \frac{q - q}{r} = 0$		8
$f(x) = \frac{x^r + rx + q}{x^r + rx + 1} \Rightarrow \frac{1}{1} = \frac{r}{r}$ $f(f(\sqrt{r}-r)) = ? \Rightarrow f\left(\frac{r}{r}\right) = \frac{\frac{r}{r} + \frac{1}{r} + q}{\frac{r}{r} + \frac{1}{r} + 1} = \frac{\frac{r}{r} + \frac{1}{r} + 1}{\frac{r}{r} + \frac{1}{r} + 1} = 1$	$f(\sqrt{r}-r) = \frac{r}{r}$	9
$f(x) = x^r + \frac{1}{x^r}$ $f(\sqrt{x}) = (\sqrt{x})^r + \frac{1}{(\sqrt{x})^r} = x^{\frac{r}{2}} + \frac{1}{x^{\frac{r}{2}}}$ $(x + \frac{1}{x})^r = x^r + r + \frac{1}{x^r}$ $x^r + \frac{1}{x^r} + r - x^r - \frac{1}{x^r} = r$	$(f(\sqrt{x}))^r - f(x)$	10