

۱	۱- برای آنکه نبرادیکال نبرت تریا مساوی صفر باشد باید x و $f(x)$ هم علامت باشند پس: $y = \sqrt{x f(x)}$ $x \cdot f(x) \geq 0$ $D_y = [-5, 0] \cup [2, 5]$ $D_f = [\cancel{-6, 4}] \cup [\cancel{0, 2}]$
۲	$y = \sqrt{-x}$ $f(x) \frac{x}{f(x)} \geq 0 \rightarrow \frac{x}{f(x)} \leq 0$ $\frac{-x}{f(x)} \geq 0$ $f(x) \neq 0 \quad D_y = (-3, 2) - \{0\}$ حالت اول: $f(x) < 0, x > 0$ حالت دوم: $f(x) > 0, x < 0$
۳	$f(2) - 2f(2) = 14 \Rightarrow f(2) = \cancel{-14}$ $f(x) = x^2 + 3x + 4 + 2(-14) = \cancel{x^2} + 3x - 24$ ۳- ابتدا $f(x)$ را بیابیم: $f(-2) = (-2)^2 + 3(-2) - 24 = -24$ $f(2) - 2f(2) = 2 \rightarrow f(2) = \cancel{-14}$ $f(x) = x^2 - 3x$
۴	$f(-2) \rightarrow f(-2) = (-2)^2 - 3(-2) = 10$ $f(1) = 2(1) + 3 = 5$ $f(f(1)) = 2$ $f(0) = 0 - \sqrt{0+4} = 0 - 2 = -2$ $f(f(0)) = \sqrt{}$ $f(2) = 2(2) + 3 = 7$ $f(f(1)) + f(f(0)) = 9$
۵	$f(x) - f(x-1) \Rightarrow -2ax + a + b$ $-2a = 4 \Rightarrow a = -2$ $+(a+b) = 2 \Rightarrow b = 4$ $a-b = -2-4 = -6$

$f(3) = 3^2 - 3(3) + 1 = 1$ $f(-1) = (-1)^2 - 3(-1) + 1 = 5$ $f(2) = 2^2 - 3(2) + 1 = -1$	$\frac{f(1) + 0}{(-1)^2} = 1$ 6
$f(4) = 13$ $f(-2) = 4$ $f(2) = 1$	$\frac{3f(4) - 2f(-2)}{f(2)} = \frac{3(13) - 2(4)}{1} = \frac{31}{1}$ 7
$f(4) = 1$ $f(1) = 4 \rightarrow f(f(4)) = 4$ $f(f(3)) \rightarrow f(3) = 2 \rightarrow f(2) = 4$ $f(f(3)) = 4$	$4 - 4 = 0$ $f(1) - 2 \cdot 4 - 5 = 4$ $\frac{0}{4} = 0$ 8
$x = \sqrt{3} - 2$ $x = \sqrt{3} - 2 \Rightarrow x + 2 = \sqrt{3}$	$(x+2)^3 = (\sqrt{3})^3$ $x^3 + 6x^2 + 12x + 8 = 3\sqrt{3}$ $f\left(\frac{x}{y}\right) = \frac{(x)^2 + 5(x) + 9}{(x)^2 + 4(x) + 0} = \frac{11}{14}$ 9
$f(\sqrt{x}) = (\sqrt{x})^2 + \frac{1}{(\sqrt{x})^2} = x + \frac{1}{x}$ $(f(\sqrt{x}))^2 = x^2 + 2 + \frac{1}{x^2}$	$\cancel{x^2 + 2} + \cancel{\frac{1}{x^2}} - \cancel{x^2} - \cancel{\frac{1}{x^2}}$ 10