

	-۵	۰	۲	۵
$f(x)$	+	۰	-	۰
x	-	-	+	+
	-	+	-	+

$\rightarrow [-5, 0] \cup [2, 5]$

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	-۳	۰	۲	۵
$f(x)$	-	+	۰	+
$-x$	+	+	-	-
	-	+	+	-

$\rightarrow (-3, 0) \cup (0, 2) \rightarrow$ ۳ عدد صحیح $-2, -1, 1$

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$f(x) - 2f(2) = x^2 - 3x + 6 \xrightarrow{x=2} f(2) - 2f(2) = 4 - 6 + 6 \rightarrow -f(2) = 4 \rightarrow f(2) = -4$
 $f(-2) - 2f(2) = 4 - (3 \times -2) + 6 = f(-2) - 2f(2) = 14 \rightarrow f(-2) - 2(-4) = 14$
 $\rightarrow f(-2) = 10$

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$f(5) = 5 - \sqrt{5+6} = 5 - 3 = 2 \rightarrow f(2) = 2 \times 2 + 3 = 7 \rightarrow f(f(5)) = 7$
 $f(1) = 2 \times 1 + 3 = 5 \rightarrow f(5) = 5 - \sqrt{5+6} = 5 - 3 = 2 \rightarrow f(f(1)) = 2$
 $f(f(5)) + f(f(1)) = 7 + 2 = 9$

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$f(x) = ax^2 - bx + 2 \rightarrow f(0) = 2$
 $f(x-1) - f(x) = 4x + 2 \xrightarrow{x=1} f(0) - f(1) = 4 + 2 = 6 \rightarrow 2 - f(1) = 6 \rightarrow f(1) = -4$
 $f(x) = ax^2 - bx + 2 \rightarrow f(1) = a - b + 2 \rightarrow -4 = a - b + 2 \rightarrow \boxed{-6 = a - b}$

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$\frac{y f(x) + f(-1)}{f^y(y)} \rightarrow \frac{(y \times 1) + 1}{(-1)^y} = \frac{y}{1} = y$ $f(y) = y^y - 1 + 1 = 1$ $f(-1) = (-1)^y - (y \times -1) + 1 = 1$ $f(y) = y^y - (y \times y) + 1 = -1$	6
$\frac{y f(f) - y f(-y)}{f(y)} \rightarrow \frac{(y \times 1^y) - (y \times f)}{y} = \frac{y \times 1 - 1}{y} = \frac{y-1}{y}$ $f(f) = (y \times f) + 1 = 1^y$ $f(-y) = (-y)^y = f$ $f(y) = (y \times y) + 1 = y$	7
$\frac{f(f(f)) - f(f(x))}{f(1) - y} \rightarrow \frac{y - y}{y - y} = \frac{0}{0} = 0$ $f(f) = 1 \rightarrow f(1) = y \rightarrow f(f(f)) = y$ $f(y) = y \rightarrow f(y) = y \rightarrow f(f(y)) = y$ $f(1) = y$	8
$f(x) = \frac{x^y + f x + 9}{x^y + f x + 1} \rightarrow \frac{y - y\sqrt{y} + (f\sqrt{y} - 1) + 9}{y - f\sqrt{y} + (f\sqrt{y} - 1) + 1} = \frac{1}{f} = y$ $(\sqrt{y} - y)^y = y + f - f\sqrt{y}$ $f_x(\sqrt{y} - y) = f\sqrt{y} - 1$ $\frac{y^y + (f \times y) + 9}{y^y + (f \times y) + 1} = \frac{y-1}{y} = f(f(\sqrt{y} - y))$	9
$f(\sqrt{x}) = (\sqrt{x})^y + \frac{1}{(\sqrt{x})^y} = x + \frac{1}{x} \rightarrow (f(\sqrt{x}))^y = \left(x + \frac{1}{x}\right)^y = x^y + \frac{1}{x^y} + y$ $(f(\sqrt{x}))^y - f(x) = x^y + \frac{1}{x^y} + y - \left(x^y + \frac{1}{x^y}\right) = y$	10