

	-۶	-۵	۰	۲	۵
n		-	-	+	+
$f(n)$		+	۰	-	+
$\frac{-n}{f(n)}$		-	۰	+	۰

$$D = [-5, 0) \cup [2, 5]$$

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	-۴	-۳	۰	۲	۵
n		-	-	+	+
$-n$		+	+	۰	-
$f(n)$		-	۰	+	۰
$\frac{-n}{f(n)}$		-	۰	+	-

$$D = (-3, 0) \cup (0, 2)$$

۳ عدد صحیح $\Rightarrow -2, -1, 1$

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$$f(n) = n^2 - 3n + f + 2f(2) \quad f(2) = f - 2 + f + 2f(2) \quad f(2) = -2$$

$$f(n) = n^2 - 3n + f + \frac{2(-2)}{-2} = n^2 - 3n$$

$$f(-2) = f + 2 = 0$$

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$$f(1) = 0$$

$$f(f(1)) = f(0) = 2$$

$$f(f(0)) = f(2) = 7$$

$$\underline{7+2=9}$$

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$$f(n-1) = a(n-1)^2 - b(n-1) + r$$

$$= an^2 - 2an + a - bn + b + r$$

$$an^2 - 2an + a - bn + b + r - an^2 + bn - r = -2an + a + b = 5n + 2$$

$$-2a = 5 \quad \underline{a = -3} \quad a + b = 2 \quad \underline{b = 5}$$

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$\frac{(\sqrt{x}-2)^2 + f(\sqrt{x}-2) + 5}{(\sqrt{x}-2)^2 + f(\sqrt{x}-2) + 7} = \frac{3 - 2\sqrt{x} + 4 + 5\sqrt{x} - 8 + 5}{3 - 2\sqrt{x} + 4 + 5\sqrt{x} - 8 + 7} = \frac{4}{5} = \frac{f}{2}$	٤
$\frac{x^2+1}{x^2} = x^2 + \frac{1}{x^2}$ $\underbrace{x^2 + \frac{1}{x^2} - 2 + 2}_{\text{}} = (x - \frac{1}{x})^2 + 2 \rightarrow f(x - \frac{1}{x}) = (x - \frac{1}{x})^2 + 2$ $f(-3) = 9 + 2 = 11$	٧
$\frac{f}{g} = \left\{ (2, 0), (1, \frac{-4}{\sqrt{2}}), (0, \frac{2}{3}) \right\}$ $\frac{g}{f} = \left\{ (2, \frac{3}{2}), (1, \frac{\sqrt{2}}{4}), (0, \frac{2}{3}) \right\}$	الف ب ٨
$2f(x) = \{(2, 2), (3, 8), (-5, 4), (1, -4)\}$ $f(x) + 1 = \{(2, 2), (3, 5), (-5, 3), (1, -1)\}$ $3f^2(x) + 1 = \{(2, 4), (3, 49), (-5, 13), (1, 13)\}$ $f(2x) = \{(1, 1), (\frac{3}{2}, 4), (-\frac{5}{2}, 2), (\frac{1}{2}, -2)\}$	الف ب ج د ٩
$f - g = \{(2, 1), (1, 4), (3, 2)\}$ $\frac{2f}{g} = \{(2, 6), (1, \frac{3}{2}), (3, -2)\}$ $2f = \{(2, 6), (7, 4), (1, 8), (3, 2), (5, 4)\}$	الف ب ١