

	-4	-5	0	2	5
u	-	-	0	+	+
$f(u)$	+	0	-	-	0
$uf(u)$	-	+	0	-	0

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

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

$u = \{-3, 0, 2, 5\}$ برابر با صفر است.

$\frac{-u}{f(u)} \geq 0 \rightarrow f(u) \neq 0$

$Df = (-3, 0) \cup (0, 2)$ شامل ۳ عدد صحیح اول، ۲ و ۳.

if $u=2 \rightarrow f(2) - 2f(2) = 2 \rightarrow -f(2) = 2 \rightarrow f(2) = -2$

if $u=-2 \rightarrow f(-2) + 1^N = 1^N \rightarrow \underline{f(-2) = 1}$

$\sqrt{f(f(5))} + \sqrt{f(f(1))} = \sqrt{7} + \sqrt{2} = 9$

$f(u) = \begin{cases} u - \sqrt{u+1}, & u > 1 \\ u+1, & u \leq 1 \end{cases}$

$u+1 = 5$

$f(n) = an^2 - bn + 2$

$\hookrightarrow f(n-1) = a(n-1)^2 - b(n-1) + 2 = an^2 - 2an + a - bn + b + 2$

$f(n-1) - f(n) = \cancel{an^2} - 2an + a - \cancel{bn} + b + 2 - \cancel{an^2} + \cancel{bn} - 2 =$

$-2an + a + b = 4n + 2$

$-b(n-1) = -bn + b \hookrightarrow -2an = 4n$

$a = -2$

$a - b = -2 - 5 = -7$

$b = 5$

$$f(\sqrt{3}-2) = \frac{(\sqrt{3}-2)^2 + 2(\sqrt{3}-2) + 5}{(\sqrt{3}-2)^2 + 2(\sqrt{3}-2) + 7} = \frac{3 - 4\sqrt{3} + 4 + 2\sqrt{3} - 4 + 10}{3 - 4\sqrt{3} + 4 + 2\sqrt{3} - 4 + 7} = \frac{6 - 2\sqrt{3}}{6 - 2\sqrt{3}} = 1$$

$\frac{2}{4} = \frac{2}{3}$

در جمع اعداد مثبت می توان کسرها را به این گونه نوشت:

$$f\left(n - \frac{1}{n}\right) = \frac{n^2 + 1}{n^2} = \frac{n^2}{n^2} + \frac{1}{n^2} = n^2 + \frac{1}{n^2}$$

$$f\left(n - \frac{1}{n}\right) = n^2 + \frac{1}{n^2}$$

$$f\left(n - \frac{1}{n}\right) = \frac{n^2 + \frac{1}{n^2} - 2 + 2}{\left(n - \frac{1}{n}\right)^2 + 2} \rightarrow f(n) = n^2 + 2$$

$$f(-3) = (-3)^2 + 2 = 11$$

$$f(n) = \{(2, 0), (1, -2), (0, 2), (\sqrt{2}, 1)\}$$

$$g(n) = \sqrt{9 - n^2} \quad \sqrt{9 - n^2} \rightarrow 9 - n^2 \geq 0 \rightarrow 9 \geq n^2 \rightarrow \begin{cases} n \geq -3 \\ n \leq 3 \end{cases}$$

$$g(n) = \{(-3, 0), (3, 0), (2, \sqrt{5}), (-2, \sqrt{5}), (0, 3), (-1, \sqrt{8}), (1, \sqrt{8})\}$$

الف) $\frac{f}{g} = \{(2, 0), (1, -\frac{2}{\sqrt{8}}), (0, \frac{2}{3})\}$

ب) $\frac{g}{f} = \{(\cancel{2, 0}), (1, \frac{\sqrt{8}}{-2}), (0, \frac{3}{2})\}$

الف) $2f(n) = \{(2, 2), (3, 1), (-5, 2), (1, -2)\}$

ب) $f(n) + 1 = \{(2, 2), (3, 5), (-5, 3), (1, -1)\}$

ج) $3f^2(n) + 1 = \{(2, 13), (3, 19), (-5, 13), (1, -1)\}$

د) $f(2n) = \{(1, 1), (\frac{3}{2}, 2), (\frac{-5}{2}, 2), (\frac{1}{2}, -2)\}$

الف) $f - g = \{(1, 2), (2, 2), (3, 2)\}$

ب) $\frac{2f}{g} = \{(\cancel{1, 2}), (2, 4), (3, -2)\}$