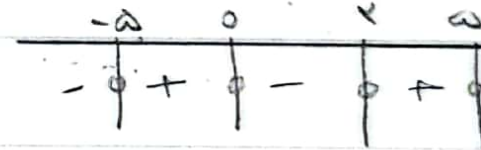


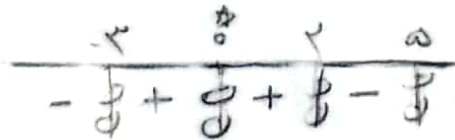
20 آرمینا کیسری کورہ رحمہ اللہ

21 $nf(n) \geq 0$ $f(n)$ ریشہ کی $\rightarrow f(n) = 0 \rightarrow n = -\omega, n = 2, n = \omega$ (1)

$$D_f = [-\omega, 0] \cup [2, \omega]$$



22 $\frac{-n}{f(n)} \geq 0$ $f(n)$ ریشہ کی $\rightarrow f(n) = 0 \rightarrow n = -3, n = 2, n = \omega, n = 0$ (2)



$$D_f = (-3, 0) \cup (0, 2) \cup (-3, 2) - \{0\}$$

$$x \leq x \rightarrow f(x) - x f(x) = x - (x \cdot x) + x$$

ابتدا با $f(x)$ ضرب می‌کنیم

$$-f(x) = x \rightarrow f(x) = -x$$

$$x = -x \rightarrow f(-x) - x f(-x) = (-x)^2 - x(-x) + x \rightarrow f(-x) = 1x - x = 0$$

$$f(\omega) \rightarrow \omega - \sqrt{\omega + x} = \omega - x = x \rightarrow f(f(\omega)) = f(x) = x + x + x = 3x$$

$$f(1) = (1 \times 1) + x = \omega \rightarrow f(f(1)) = f(\omega) = \omega - \sqrt{\omega + x} = x$$

$$f(f(\omega)) + f(f(1)) = 3x + x = 4x$$

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

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

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

$$\rightarrow -2an + a + b = 4n + x \rightarrow -2a = 4 \quad a = -2$$

$$b - x = x \quad b = 2x$$

$$a - b = -2 - 2x = -2$$

$$f(x) = \frac{x^2 + fx + \omega}{x^2 + fx + v} = \frac{(x+x)^2 + 1}{(x+x)^2 + 3} \rightarrow f(\sqrt{x} - x) = \frac{(\sqrt{x} - x)^2 + 1}{(\sqrt{x} - x)^2 + 3} = \frac{x + 1}{x + 3} = \frac{x}{x} + \frac{1}{3} = \frac{x}{3}$$

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

$$f(-x) = (-x)^2 + x = x + x = 2x$$

$$D_f = \{x, y, z, v\} \quad D_g = \{1 - x^2, y, z\} \rightarrow x^2 \{x, y, z\}$$

$$\text{الف)} \quad \frac{f}{g} = \left\{ \left(x, \frac{0}{\sqrt{10}} \right), \left(1, \frac{x}{\sqrt{10}} \right), \left(0, \frac{y}{\sqrt{10}} \right) \right\} = \left\{ (x, 0), (1, -\sqrt{x}), \left(0, \frac{y}{\sqrt{x}} \right) \right\}$$

$$\frac{y}{\sqrt{x}} = \frac{y}{\sqrt{x}} \times \frac{\sqrt{x}}{\sqrt{x}} = \frac{y\sqrt{x}}{x}$$

$$\text{ب)} \quad \frac{g}{f} = \left\{ \left(1, \frac{\sqrt{10}}{x} \right), \left(1, \frac{\sqrt{10}}{-x} \right), \left(0, \frac{\sqrt{10}}{y} \right) \right\} = \left\{ \left(1, \frac{-\sqrt{10}}{x} \right), \left(0, \frac{\sqrt{10}}{y} \right) \right\}$$

$$\text{الف)} \quad f(x, y, z, v) \rightarrow f(2, 2), f(3, 8), f(-5, 4), f(1, -4)$$

$$\text{ب)} \quad f(2, 2), f(3, 8), f(-5, 4), f(1, -4)$$

$$\text{ج)} \quad f(2, 4), f(3, 4), f(-5, 4), f(1, 4)$$

$$\text{د)} \quad f(1, 1), f\left(\frac{x}{2}, 4\right), f\left(\frac{-5}{4}, 2\right), f\left(\frac{1}{2}, -2\right)$$

الف $\{(2,2), (1,4), (3,2)\}$

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

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