

به ازای x مقدار منفی شد $f(x+1) = \left(\frac{1}{x}\right)^{x-1} - 1 = x^{1-x} - 1 \geq 0$

$\sqrt{x^2 f(x+1)} \geq 0 \Rightarrow \frac{0}{+ \infty - \infty} \Rightarrow D = (-\infty, 0] \cup [1, \infty)$

$f(-x) = \sqrt{-x + |2-x|}$

$\frac{2}{-x - x + 2} = -2x \Rightarrow -x + x - 2 = -2 \Rightarrow \frac{1}{+ \infty -}$

$\Rightarrow Df = (-\infty, 1]$

$\sqrt{\frac{x-1}{f(x)}} \Rightarrow \frac{x-1}{f(x)} \geq 0 \Rightarrow \frac{-4 \quad 1 \quad 2 \quad 3}{- \infty + \infty - \infty + \infty}$

$\Rightarrow D = (-4, 1] \cup (2, 3)$

$\frac{1}{9x^4 - \sqrt{x^4 - 4x - 2}} = \frac{1}{(3x^2 - x - 2)(3x^2 + x + 1)} \Rightarrow \frac{1}{3x^2 - x - 2} = \frac{1}{3x^2 + x + 1}$

$\Rightarrow a = -1, b = -2$

$\sqrt{-(a+b)} = \sqrt{-(-4)} = 2$

استیلا پذیری و پس فرج چیست x^3 با هم داریم $f(x) - f\left(\frac{x}{2}\right) \geq 0 \Rightarrow x^6 + x^4 - 4x^2 - 9$

$x^2 = t \Rightarrow \frac{t^3 + t^2 - 4t - 9}{x^2} = \frac{t^3 - 9 + t(t-4)}{x^2} = \frac{(t-4)(t^2 + 4t + 16)}{x^2} + t(t-4)$

$\frac{(t-4)(t^2 + 4t + 16)}{x^2} \begin{cases} t=4 \Rightarrow x=2 \\ t=0 \Rightarrow x=0 \end{cases} \Rightarrow \frac{-2 \quad 2}{- \infty + \infty - \infty} \Rightarrow Df = [-2, 0] \cup [2, \infty)$

$$f(x^2+x) = 2x^2-1 \quad f(2)+f(1) = 9$$

$$f(2+1) = 1-1 \Rightarrow f(1) = 0 \Rightarrow f(2)+f(1) = 1$$

$$f(1+1) = 2-1 \Rightarrow f(2) = 1$$

$$g(x) = x^2+9x^2+2\sqrt{x} \Rightarrow (x+2)^2 = x^2+4x^2+2\sqrt{x}+2\sqrt{x} \Rightarrow g(x) = (x+2)^2 - 2\sqrt{x}$$

$$f(x) = x^2-9x^2+12x \Rightarrow (x-2)^2 = x^2-4x^2+12x-4 \Rightarrow f(x) = (x-2)^2 + 4$$

$$\frac{g(\sqrt{2}-2)}{f(\sqrt{2}+2)} = \frac{2-2\sqrt{2}}{4} = \frac{-2}{4} = -\frac{1}{2}$$

$$f(x) = \sqrt{x+5\sqrt{x-4}} = \sqrt{(x-4)} + 2\sqrt{x-4} + 2 = \sqrt{x-4} + 2$$

$$g(x) = \sqrt{x-5\sqrt{x-4}} = \sqrt{(x-4)-2\sqrt{x-4}} = \sqrt{x-4} - 2$$

$$\Rightarrow f(x) + g(x) = 2\sqrt{x-4} \Rightarrow \frac{a}{b} = \frac{2}{-2} = -1$$

$$\frac{g}{f} = \begin{cases} D_f \Rightarrow \frac{x+2}{(x-1)(x-2)} \rightarrow \mathbb{R} - \{1, 2\} \\ D_g = \{2, 1, 3, 0\} \Rightarrow \{1, 2\} = \{2, 0\} \end{cases}$$

$$\Rightarrow \frac{g}{f} = \left\{ \left(2, \frac{1}{2}\right), \left(0, \frac{2}{2}\right) \right\} = \left\{ \left(2, \frac{1}{2}\right), (0, 1) \right\}$$

$$الف) f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 2\right) \right\}$$

$$ب) f(x^2) = \left\{ (1, 2), (\sqrt{3}, -1), (2, 2), (\sqrt{-1}, 2) \right\} \rightarrow \text{تصنيف شده}$$

$$ج) 2g^2(x)+1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$$

$$د) \frac{2f}{g} = \left\{ \left(1, \frac{4}{-1}\right), \left(3, \frac{-2}{2}\right), \left(\sqrt{3}, \frac{1}{2}\right) \right\} \rightarrow \text{تصنيف شده}$$

$$\frac{-2}{-1}$$