

$$f(x) = \left(\frac{1}{r}\right)^{x-1} - 1$$

$\hookrightarrow \lim_{x \rightarrow \infty} = \infty$

$$y = \sqrt{x^{13} f(x)} \quad \begin{matrix} \text{ریشه} = 13 \\ \text{ریشه} = 1 \end{matrix}$$

$$\begin{array}{c} 0 \quad 1 \\ \hline - \phi \quad + \quad \phi \quad - \end{array} \rightarrow Dy = [0, 1]$$

$$f(x) = \sqrt{x + |x+1|}$$

$$f(-x) = \sqrt{-x + |1-x|}$$

$$\begin{cases} -x + x - 2 = -2 & x \geq 2 \rightarrow \text{زیر ادیکال نمی رود} \\ -x + 2 - x = -2x + 2 & x \leq 2 \rightarrow -2x + 2 \geq 0 \rightarrow x \leq 1 \checkmark \end{cases}$$

$$\longrightarrow D_{f(-n)} = (-\infty, 1]$$

$$y = \sqrt{\frac{n-1}{f(n)}} \rightarrow 1$$

$-K, 1, 2, 3 \in$

$$\frac{-\Delta - f}{\alpha f - \phi} + \frac{1}{\phi - \phi} + \frac{2}{\phi} + \frac{1}{\phi} \alpha$$

$$Dy = (-1, 1] \cup (2, 3)$$

$$y_1 = \frac{1}{4x^2 - 4x - 1}$$

$$y_r = \frac{1}{r^n + a n + b}$$

$$Dy_1 = Dy_2$$

$$y_1 = y_2 = \text{مشیہ کا معراج}$$

y_1 ریشه ها مخرج y_2
 $(3x^2 - x - 2) = (3x^2 + x + 1)$ تجزیه
 $\rightarrow$ y_2 مساوی مخرج y_1

$$\rightarrow r_n - n - r = r_n + a + b \quad \frac{a = -1}{b = -r} \rightarrow \sqrt{-(a+b)} = \sqrt{r} = r$$

$$f(x) = x^4 + x$$

$$y = \sqrt{f(n) - f\left(\frac{n}{2}\right)} \rightarrow$$

$\begin{array}{ccc} -2 & 0 & 2 \\ - & \phi & + \\ - & \phi & + \end{array}$

$$\hookrightarrow D_y = [-r, 0) \cup [r, +\infty)$$

$f(x^2+x) = 2x^2-1$ $f(2)+f(10) = ?$ if $x=1 \rightarrow f(2) = 2-1 = 1$ if $x=2 \rightarrow f(10) = 8-1 = 7$ $\rightarrow f(2)+f(10) = 1+7 = 8$	6
$f(x) = x^3-4x^2+12x = (x-2)^3+8 \rightarrow f(\sqrt{2}+2) = 10$ $g(x) = x^3+9x^2+27x = (x+3)^3-27 \rightarrow g(\sqrt{2}-3) = -20$ $\rightarrow \frac{g(\sqrt{2}-3)}{f(\sqrt{2}+2)} = \frac{-20}{10} = -2$	7
$f(x) = \sqrt{x+4\sqrt{x-4}}$ $g(x) = \sqrt{x-4\sqrt{x-4}}$ $g(x)+f(x) = A \rightarrow A = \sqrt{x+4\sqrt{x-4}} + \sqrt{x-4\sqrt{x-4}}$ $\rightarrow A^2 = x+4\sqrt{x-4} + x-4\sqrt{x-4} + 2\sqrt{x^2-14x+16} = (x-1)^2$ $\rightarrow A^2 = 2x+2x-14 = 4x-14 \rightarrow A = \sqrt{4x-14} = 2\sqrt{x-4}$ $\rightarrow a=0, b=2, c=-4 \rightarrow \frac{a+b}{c} = \frac{2}{-4} = -\frac{1}{2}$	8
$f(x) = \frac{x+2}{x^2-4x+3} = \frac{x+2}{(x-1)(x-3)}$ می دانیم که 1 و 3 در تابع $f(x)$ $g(x) = \{(2,1)(1,0)(3,2)(0,4)\}$ تعریف نمی شوند و چون $f(x)$ درخرج است نباید صفر شود. (عامل صفر کننده نداریم) $D_{g/f} = \{2, 0\}$ $g_{f/x} = \{(2, \frac{1}{-4})(0, \frac{4}{-3})\} = \{(2, -\frac{1}{4})(0, 4)\}$	9
$f(x) = \{(1,2)(3,-1)(4,2)(-1,4)\}$ $g(x) = \{(-2,3)(1,-1)(3,2)(-1,0)\}$ الف) $f(2x) = \{(\frac{1}{2},2)(\frac{3}{2},-1)(2,2)(-\frac{1}{2},4)\}$ ب) $f(x^2) = \{(1,2)(-1,2)(\sqrt{3},-1)(-\sqrt{3},-1)(2,2)(-2,2)\}$ ج) $2g^2(x)+1 = \{(-2,19)(1,3)(3,9)(-1,1)\}$ د) $\frac{2f}{g} = \{(1,-4)(3,-1)\}$	10