

$$f(x^r + x) = 2x^r - 1 \quad f(r) + f(10) = ? \rightarrow 1 + 11 = 12$$

$$\text{if } x=1 \rightarrow (x^r + x) = 1+1 = 2$$

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

$$\text{if } x=2 \quad (x^r + x) = 11+2 = 13 \Rightarrow f(13) = 2(2)^r - 1 = 11-1 = 10$$

$$f(x) = (x-2)^r + 1$$

$$g(x) = (x+2)^r - 25$$

$$\Rightarrow \frac{g(\sqrt[3]{10} - 2)}{f(\sqrt[3]{10} + 2)} = \frac{(\sqrt[3]{10} - 2 + 2)^r - 25}{(\sqrt[3]{10} - 2 + 2)^r + 1} = \frac{(\sqrt[3]{10})^r - 25}{(\sqrt[3]{10})^r + 1} = \frac{10 - 25}{1 + 1} = \frac{-15}{2} = -7.5$$

$$f(x) = \sqrt{x+t}$$

$$f = \varepsilon \sqrt{x-\varepsilon}$$

$$14(x-\varepsilon)$$

$$g(x) = \sqrt{x-t}$$

$$\frac{a+b}{c} = \frac{10}{12} = \frac{5}{6}$$

$$\text{if } x > \varepsilon \rightarrow \sqrt{x+t} + \sqrt{x-t} = a + b\sqrt{x+c}$$

$$f(x) + g(x) \rightarrow x+t + x-t + 2\sqrt{x^2-t^2} \rightarrow 2x + 2\sqrt{x^2-14x+49} \rightarrow 2x + 2\sqrt{(x-7)^2}$$

$$\text{if } x=7 = 14 + 2\sqrt{14} \Rightarrow a+b\sqrt{x+c} \quad a=14 \quad b=2 \quad 14 = t+c \Rightarrow c = -14$$

$$f(x) = \frac{x+2}{x^2-5x+3} \quad \hookrightarrow (x-3)(x-1)$$

$$g(x) = \{(2,1), (1,2), (3,2), (2,3)\}$$

$$\frac{f}{g} = ?$$

$$\frac{f}{g} = \left\{ \left(2, \frac{1}{2}\right), (1, 0), \left(3, \frac{2}{3}\right), (0, 2) \right\} \Rightarrow \left\{ \left(2, \frac{1}{2}\right), (0, 2) \right\}$$

من $f(x)/g$

$$\text{أ) } f(2x) \rightarrow \{(1, 2), (2, 2), (3, 2), (-1, 2)\}$$

$$\text{ب) } f(x^2) \rightarrow \{(1, 2), (2, 2), (3, 2), (-1, 2)\}$$

$$\text{ج) } 2g^2(x) + 1 \rightarrow \{(-2, 1), (1, 3), (2, 3), (-1, 1)\}$$

$$\text{د) } \frac{2f}{g} \rightarrow \{(1, -2), (2, -1), (-1, 0)\} \Rightarrow \{(1, -2), (2, -1)\}$$

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

$$x^x f(x+1) \geq 0$$

$$x^x \rightarrow x \rightarrow [0, +\infty)$$

$$f(x+1) \geq 0 \rightarrow \left(\frac{1}{x+1}\right)^{x+1-1} - 1 \geq 0 \left(\frac{1}{x}\right)^{x-1} \geq 1 \Rightarrow x-1 \leq 0 \Rightarrow x \leq 1$$

$$\textcircled{1} \cap \textcircled{2} = [0, 1]$$

۱

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

$$-x - x - 2 \geq 0 \rightarrow -2x - 2 \geq 0 \quad -2x \geq 2 \rightarrow x \leq -1$$

$$-x + x + 2 \geq 0 \rightarrow 2 \geq 0$$

$$\Rightarrow DF = [-\infty, -1]$$

۲

$$y = \sqrt{\frac{x-1}{f(x)}} \quad \frac{x-1}{f(x)} \geq 0$$

$$\Rightarrow [1, 2] \cup [-1, 0)$$

طبق شکل

۳

$$9x^2 - 4x^2 - (x-3) = 3x^2 + ax + b$$

$$9x^2 - 4x^2 + (f+a)x - 3 - b = 0 \Rightarrow \Delta = 0$$

۴

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

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

$$f(x) - f\left(\frac{x}{2}\right) \geq 0$$

$$x^x + x - \frac{4x}{x^x} - \frac{x}{2} \geq 0$$

۵