

$$f(x) = x + 1 = \begin{cases} x & : x \geq 0 \\ 2x + 1 & : x < 0 \end{cases}$$

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

$$-\frac{1}{x} + 1 \quad (2)$$

$$(1) \wedge (2) \Rightarrow D_g = \left[-\frac{1}{x} + 1 \geq 0\right]$$

$$\frac{2(1x^2 + 1x^2 + 2x + 1)}{(2(x + \frac{1}{x}))^2} = \frac{2(2x + 1)^2}{4 + (x + \frac{1}{x})^2} = \frac{2}{1 + (x + \frac{1}{x})^2} \quad (3)$$

$$1, 0 < \frac{1}{x + \frac{1}{x}} \Rightarrow D = \mathbb{R} - \left\{\frac{1}{x}\right\}$$

$$\frac{(x+1)(x+2)(x-1)}{x^2-1} = x+2 \Rightarrow c=2 \quad (4)$$

$$g(x) = x+2 \Rightarrow g(0) = 2, g(-1) = 1$$

$$\frac{a+2}{1+b} = 2, \quad \frac{2-a}{b-1} = 1 \Rightarrow b-1 = 2-a \Rightarrow a = 3-b$$

$$\frac{2-b}{1+b} = 2 \Rightarrow 2 + 2b = 2 \Rightarrow b = \frac{1}{2}$$

$$c=2, b=\frac{1}{2} \Rightarrow \frac{2}{x} = b+c = \frac{5}{2}$$

$$(x-1)(x-c) = x^2 + ax + b \Rightarrow x^2 - (c+1)x + c$$

$$\Rightarrow a = -(c+1), b = c \quad (5)$$

v. x.

$$\Rightarrow f(x) = g(x) \Rightarrow D_f = D_g$$

سوال ۱

$$\Rightarrow D_g(x) = \mathbb{R} - \{1, c\}$$

$$\Rightarrow D_{f(x)} = \mathbb{R} - \{c\} \Rightarrow \{c\} = \mathbb{R} - \{1, c\} \Rightarrow c = 1$$

$$\Rightarrow -(1+c) + c + c = c - 1 = 1 - 1 = 0$$

$$a = f(x+1) = (x+1)^2 (x)$$

سوال ۲

$$b = f(1-x) = (-x-1)^2 (-x)$$

$$g(x) = a + b = (x) \left(\frac{(x-1)^2 - (x+1)^2}{(2x)(-1)} \right) = -1x^2$$

$$1-2x = -1 \Rightarrow x = 1$$

$$1-2x = 3 \Rightarrow x = -1$$

سوال ۳

$$x\sqrt{1} + x\sqrt{-1} + 2 = 2$$

$$x + \sqrt{x} = 2$$

$$\Rightarrow x + \sqrt{x} - 2 = 0 \Rightarrow \sqrt{x} = \frac{-1 \pm \sqrt{1-4}}{1} = 2$$

$$\Rightarrow x = 4 \Rightarrow x^2 + 3x = 24$$

سوال ۴

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

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

سوال ۵

$$\Rightarrow f(x-1) + f(-x+1) = (x-1)^2 (2) \Rightarrow (2x^2 - 4x + 2 = g(x))$$

$$y f(1) - g(1) = k = y \sqrt{f - \frac{a}{y}} + |k - y| \sqrt{b - f} + yk \quad (9)$$

$$\Rightarrow -k - y + y \sqrt{f - \frac{a}{y}} - \sqrt{b - f} = k$$

$$y k + y = y \sqrt{f - \frac{a}{y}} - \sqrt{b - f}$$

$$\sqrt{b - f} + \frac{b}{f} //$$

$$\Rightarrow D_r = (-\infty, \frac{b}{f}]$$

$$\sqrt{f x - \frac{a}{x}} //$$

$$D_1 = [\frac{a}{f}, +\infty)$$

$$\Rightarrow D_r \cap D_1 = \{1\} \Rightarrow \frac{b}{f} = \frac{a}{f} = 1 \Rightarrow b = f, a = \frac{a}{f}$$

$$\Rightarrow y k + y = \cancel{y \sqrt{0} - \sqrt{0}} \Rightarrow k = -1$$

$$\frac{ya - \frac{b}{y}}{f - \frac{1}{y}} = \frac{-k}{+1} = y$$

(10)

$$D_1 = \left[\frac{m}{m}, \frac{m}{m} \right] \quad D_r = \left[\frac{m}{m}, \frac{m}{m} \right]$$

$$\Rightarrow D_1 \cap D_r = [-16m] = D_{f \times g} = [-16V]$$

$$\Rightarrow m = v$$

$$\Rightarrow f - g(x) = \epsilon \sqrt{y} = \sqrt{V - x} + n - x \sqrt{y}$$

$$\Lambda \sqrt{y} = y + n \Rightarrow n = \Lambda \sqrt{y} - y$$

$$\bar{n} + m = V + \Lambda \sqrt{y} - y = \Delta + \Lambda \sqrt{y}$$