

۲

۱۷, ۵

۱. میری سروری دوازده ساله A

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

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

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

$$(1) \wedge (2) \Rightarrow b_g = \left[-\frac{f}{4} + \infty \right)$$

$$\frac{2(1x^2 + 1x^2 + 2x + 1)}{(2(x + \frac{1}{2}))^2} = \frac{2(2x + 1)^2}{4 + (x + \frac{1}{2})^2} = \frac{2}{1 + (x + \frac{1}{2})^2} = \frac{2}{1 + x^2 + x + \frac{1}{4}} = \frac{2}{x^2 + x + \frac{5}{4}}$$

$$1, 0 \approx \frac{1}{x + \frac{1}{2}}$$

$$\Rightarrow D = \mathbb{R} - \left[-\frac{1}{2} \right)$$

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

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

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

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

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

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

v. x.

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

سوال ۱

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

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

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

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

سوال ۲

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

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

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

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

سوال ۲ ۱, ۱/۷۵

$$x\sqrt{1} + \sqrt{-1} + 2 = 2 - 1 + 2 = 3$$

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

$$\Rightarrow x + \sqrt{x} - 2 = 0 \Rightarrow \sqrt{x} = \frac{-1 \pm \sqrt{5}}{2} = 2$$

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

سوال ۲ ۷۵

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

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

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

$$f(n-1) = (n-1)^r + (n-1)$$

$$f(1-n) = (1-n)^r + (1-n)$$

→

$$y f(1) - g(1) = k = y \sqrt{f - \frac{3}{2}a} + |k - y| \sqrt{b - f} + \frac{3}{2}k \quad (9)$$

$$\Rightarrow -k - y + y \sqrt{f - \frac{3}{2}a} - \sqrt{b - f} = k$$

(2)

$$y k + y = y \sqrt{f - \frac{3}{2}a} - \sqrt{b - f}$$

$$\sqrt{b - f} + \frac{b}{f} \quad \sqrt{f x - \frac{3}{2}a} + \frac{y}{f} a$$

$$\Rightarrow D_2 = (-\infty, \frac{b}{f}]$$

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

$$\Rightarrow D_2 \cap D_1 = \{1\}$$

$$\Rightarrow \frac{b}{f} = \frac{y}{f} a = 1 \Rightarrow b = f, a = \frac{f}{y}$$

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

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

(2) (10)

$$D_1 = \left[\frac{m}{m}, \frac{m}{m} \right] \quad D_2 = \left[\frac{1}{m}, \frac{1}{m} \right]$$

$$\Rightarrow D_1 \cap D_2 = [-16m] = D_{f \times g} = [-16V]$$

$$\Rightarrow m = V$$

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

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

$$n + m = V + \Lambda \sqrt{y} - y = 0 + \Lambda \sqrt{y}$$