

نام و نام خانوادگی: کسری جلالی ... پاسخنامه تشریحی تکلیف شماره ... کلاس: دوازدهم ...

$$f(x) = \begin{cases} 2x-1 & [x] > 2 \\ \varepsilon x + 3 & [x] \leq 2 \end{cases} \rightarrow f(x) = \begin{cases} 2x-1 & x \geq 3 \rightarrow y = \sqrt{x} & x \geq 0 \\ \varepsilon x + 3 & x < 3 \rightarrow y = \sqrt{2x+1} & 2x+1 \geq 0 \\ & & x \geq -\frac{1}{2} \end{cases}$$

$$D_f = [-\frac{1}{2}, +\infty)$$

$$y = \frac{2\varepsilon x^2 + 3\varepsilon x + 3}{(\varepsilon x^2 + 2x + 1)^2} = \frac{2(1x^2 + 2x + 1)}{(1x^2 + 1)^2} = \frac{2(2x+1)^2}{(2x+1)^2} = \frac{2}{2x+1}$$

$$D = \{x \in \mathbb{R} - \{-\frac{1}{2}\}\}$$

$$f(x) = \begin{cases} \frac{x^2 + 2x^2 - x - 1}{x^2 - 1} & ; x \neq \pm 1 \\ \frac{ax+b}{x+c} & ; x = \pm 1 \end{cases} \quad \begin{matrix} \frac{x^2 + 2x^2 - x - 1}{x^2 - 1} \cdot \frac{x+1}{x+1} \\ \frac{-x^2 - x - 1}{x^2 - 1} \end{matrix} \Rightarrow g(x) = f(x)$$

$$\begin{aligned} g(x) &= x+c \\ g(1) &= 1+C = 1+1=2 \\ g(-1) &= 1 \end{aligned} \quad \begin{aligned} f(1) &= \frac{a+1}{b+1} = 2 \\ f(-1) &= \frac{1-a}{b-1} = 1 \end{aligned} \quad \begin{cases} a+1=2b+2 \\ 1-a=2b-1 \end{cases} \quad \begin{cases} C=1 \\ C+b=2 \end{cases}$$

$$f(x) = g(x) \rightarrow D_f \subset D_g$$

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

$$x^2+ax+b = (x-1)^2 = x^2 - 2x + 1 \quad \begin{matrix} a = -2 & b = 1 & c = 1 & a+b+c = 0 \end{matrix}$$

نیز داریم: $x^2+ax+b = (x-1)^2$

$$\begin{aligned} f(x) &= (x-1)^2(x-1) \\ f(x+1) &= (x-1)^2(x) \\ f(x+1) &= (-x+1)^2(x) \end{aligned} \quad \left\{ \begin{aligned} (-x+1)^2 &= (x+1)^2 \end{aligned} \right.$$

$$g(x) = f(x+1) + f(1-x) = x(x-1)^2 - x(x+1)^2 = x^3 - 2x^2 + x - x^3 - 2x^2 - x - 1 = -4x^2 - 1$$

$$f(1-x) = \begin{cases} \sqrt{x+1} & x \leq 0 \\ \varepsilon \sqrt{x} & x > 0 \end{cases} \quad f(-1) = ? \quad 1-x = -1 \rightarrow x = 1 \xrightarrow{x \leq 0} f(-1) = \sqrt{1} = 1$$

$$f(x) = ? \quad 1-x = 1 \rightarrow x = 0 \xrightarrow{x > 0} f(1) = 1$$

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

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$$f(x + \sqrt{x}) = x^k + \sqrt{x} \quad f(4) = (k)_+^k + \sqrt{4} = 2 \cdot 4 + 2 = 10$$

$$x + \sqrt{x} = 4$$

$$\sqrt{x} = 4 - x$$

$$x^k - 12x + 44 = 0$$

$$x^k - 12x + 44 = 0$$

$$(x-4)(x-1) = 0$$

$$x = 4 \quad x = 1$$

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

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

$$f(x-1) + f(1-x) = (x-1)^k + x - 1 + (1-x)^k - x + 1 = (x-1)^k + (1-x)^k = 0$$

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$$g(x) = \sqrt{b-fx+k} \quad D_g \Rightarrow b - \varepsilon x \geq 0 \quad x \leq \frac{b}{\varepsilon}$$

$$f(x) = \sqrt{\varepsilon x - k + 1} \quad D_f \Rightarrow \varepsilon x - k + 1 \geq 0 \quad x \geq \frac{k-1}{\varepsilon}$$

$$\frac{k-1}{\varepsilon} = 1 \quad a = \frac{f}{\varepsilon} \quad \frac{b}{\varepsilon} = 1 \quad b = \varepsilon$$

$$\Rightarrow f(1) - g(1) = k \Rightarrow (1+k-1) - \sqrt{k-1} = k - 1 = k \rightarrow k = -1$$

$$f(x) = \sqrt{m-x} + n \quad D_f = (-\infty, m]$$

$$g(x) = \sqrt{x+1} \quad D_g = [-1, +\infty)$$

$$(I), (II) \Rightarrow D_f = (-\infty, V] \rightarrow m = V$$

$$f(V) - g(V) = 4\sqrt{V} \quad \sqrt{V-m} + n - \sqrt{V+1} = 4\sqrt{V} \quad n = 4\sqrt{V} - \sqrt{V-m} + 1$$

$$m+n = 4\sqrt{V} + 1$$

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