

نام و نام خانوادگی: کجاستی جلال... پاسخنامه تشریحی تکلیف شماره... کلاس: دوازدهم... $f(x) = \begin{cases} 2x-1 & [x] > 4 \\ \varepsilon x + 3 & [x] \leq 4 \end{cases} \rightarrow f(x) = \begin{cases} 2x-1 & x \geq 5 \rightarrow y = \sqrt{x} & x \geq 0 \\ \varepsilon x + 3 & x < 5 \rightarrow y = \sqrt{x+4} & 3x+4 \geq 0 \\ & x \geq -\frac{4}{3} \end{cases}$ $D_f = [-\frac{4}{3}, +\infty)$	۲ ۱
$y = \frac{2\varepsilon x^2 + 3\varepsilon x + 3}{(\varepsilon x^2 + 4x + 3)^2} = \frac{2(1x^2 + 4x + 3)}{(1x^2 + 4x + 3)^2} = \frac{2(1x + 1)^2 (x+1)}{(1x + 1)^4} = \frac{2}{1x + 1}$ $x+1 \neq 0 \quad x \neq -1$ $D = \mathbb{R} - \{-1\}$	۲ ۲
$f(x) = \begin{cases} \frac{x^2 + 2x^2 - x - 1}{x^2 - 1} & ; x \neq \pm 1 \\ \frac{ax + b}{x + c} & ; x = \pm 1 \end{cases} \quad \frac{x^2 + 2x^2 - x - 1}{x^2 - 1} \cdot \frac{x+1}{x+1} = \frac{x^2 - 1}{x+1} \Rightarrow g(x) = f(x)$ $g(x) = x + c$ $g(1) = 1 + c = 1 + 1 = 2$ $g(-1) = 1$ $f(1) = \frac{a+1}{b+1} = 2$ $f(-1) = \frac{1-a}{b-1} = 1$ $\begin{cases} a+1 = 2(b+1) \\ 1-a = b-1 \end{cases} \Rightarrow \begin{cases} a+1 = 2b+2 \\ 1-a = b-1 \end{cases} \Rightarrow \begin{cases} a = 2b+1 \\ 1-a = b-1 \end{cases} \Rightarrow \begin{cases} a = 2b+1 \\ 1-(2b+1) = b-1 \end{cases} \Rightarrow \begin{cases} a = 2b+1 \\ -2b = b-2 \end{cases} \Rightarrow \begin{cases} a = 2b+1 \\ -3b = -2 \end{cases} \Rightarrow \begin{cases} a = 2b+1 \\ b = \frac{2}{3} \end{cases} \Rightarrow \begin{cases} a = \frac{4}{3}+1 = \frac{7}{3} \\ b = \frac{2}{3} \end{cases}$	۳ ۳
$f(x) = g(x) \rightarrow D_f \supset D_g$ $\frac{(x-1)(x+1)}{x^2 + ax + b} = \frac{(x+1)}{x-c}$ $x^2 + ax + b = (x-1)^2 = x^2 - 2x + 1$ $a = -2 \quad b = 1 \quad c = 1$ $a+b+c = 0$	۴ ۴
$f(x) = (x-1)^2(x-1)$ $f(x+1) = (x-1)^2(x)$ $f(x+1) = (-x+1)^2(x)$ $g(x) = f(x+1) + f(1-x) = x(x-1)^2 - x(x+1)^2 = x(x^2 - 2x + 1) - x(x^2 + 2x + 1) = x^3 - 2x^2 + x - x^3 - 2x^2 - x = -4x^2$	۵ ۵

$$f(1-x) = \begin{cases} \sqrt{x}+1 & x \leq 0 \\ \varepsilon\sqrt{x} & x > 0 \end{cases} \quad f(-1) = ? \quad 1-x = -1 \rightarrow x = 2 \xrightarrow{x \leq 0} f(-1) = \sqrt{2}+1$$

$$f(x) = ? \quad 1-x = 2 \rightarrow x = -1 \xrightarrow{x \leq 0} f(2) = \sqrt{2}+1$$

$$f(-1) + f(2) = \sqrt{2}+1 = \boxed{\sqrt{2}+1}$$

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

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

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

$$x^k - 14x + 16 = 0$$

$$x^k - 14x + 16 = 0$$

$$(x-9)(x-2) = 0$$

$$x = 9 \quad x = 2$$

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

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

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

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

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

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

$$\Rightarrow f(1) - g(1) = k \Rightarrow (0+k-1) - k = -k-1 = k \rightarrow k = -1$$

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

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

$$D_g \cap D_f = [-1, m]$$

$$(I), (II) \Rightarrow D_f = (-\infty, m] \rightarrow m = 4$$

$$f(4) - g(4) = 4\sqrt{4} \quad \sqrt{4-m} + n - \sqrt{4+1} = 4\sqrt{4} \quad n = 4\sqrt{4} - \sqrt{5}$$

$$m+n = 4\sqrt{4} + \sqrt{5}$$